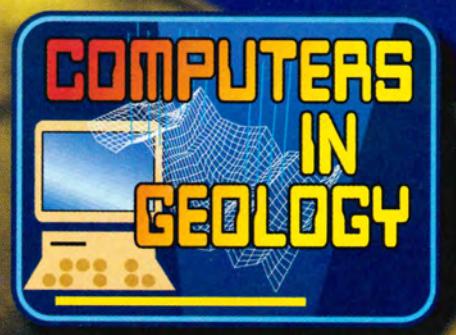
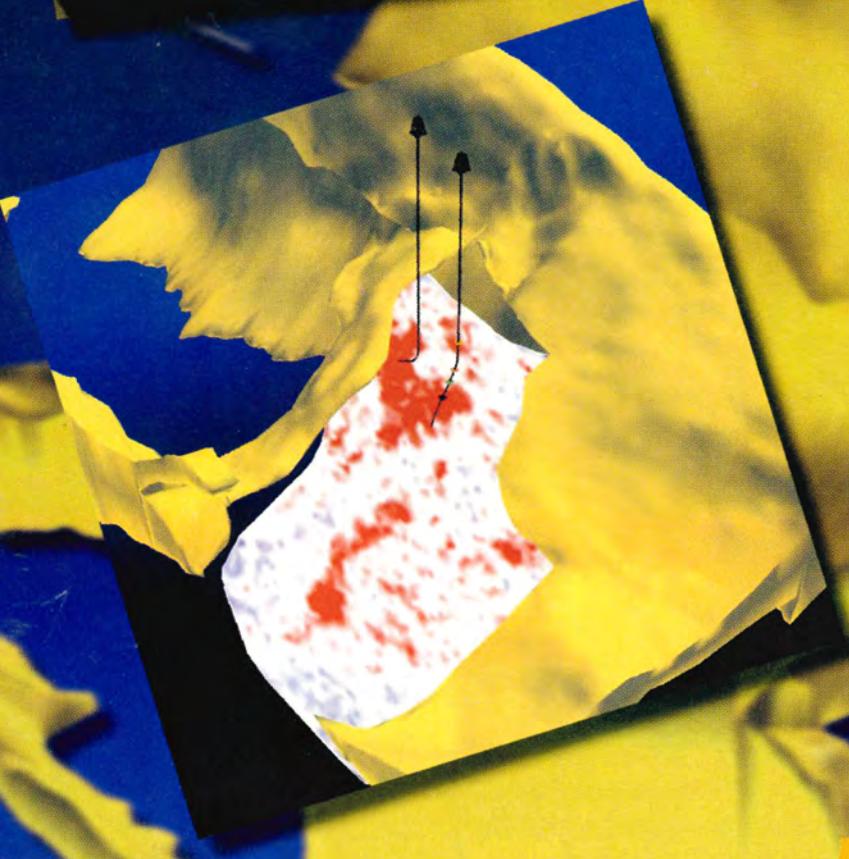
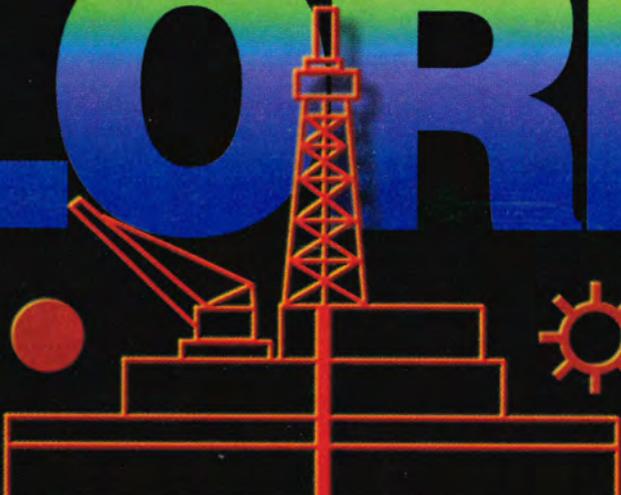


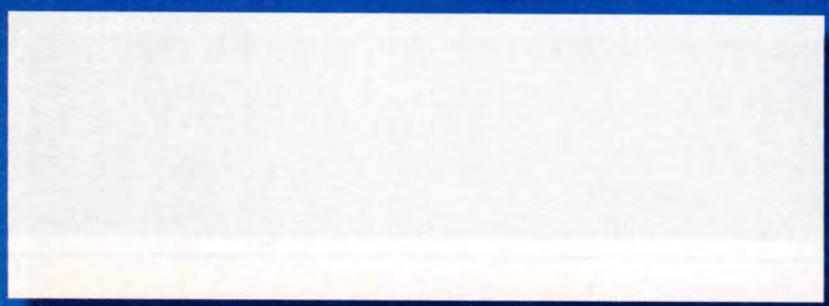
AAPG AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, AN INTERNATIONAL ORGANIZATION

EXPLORER

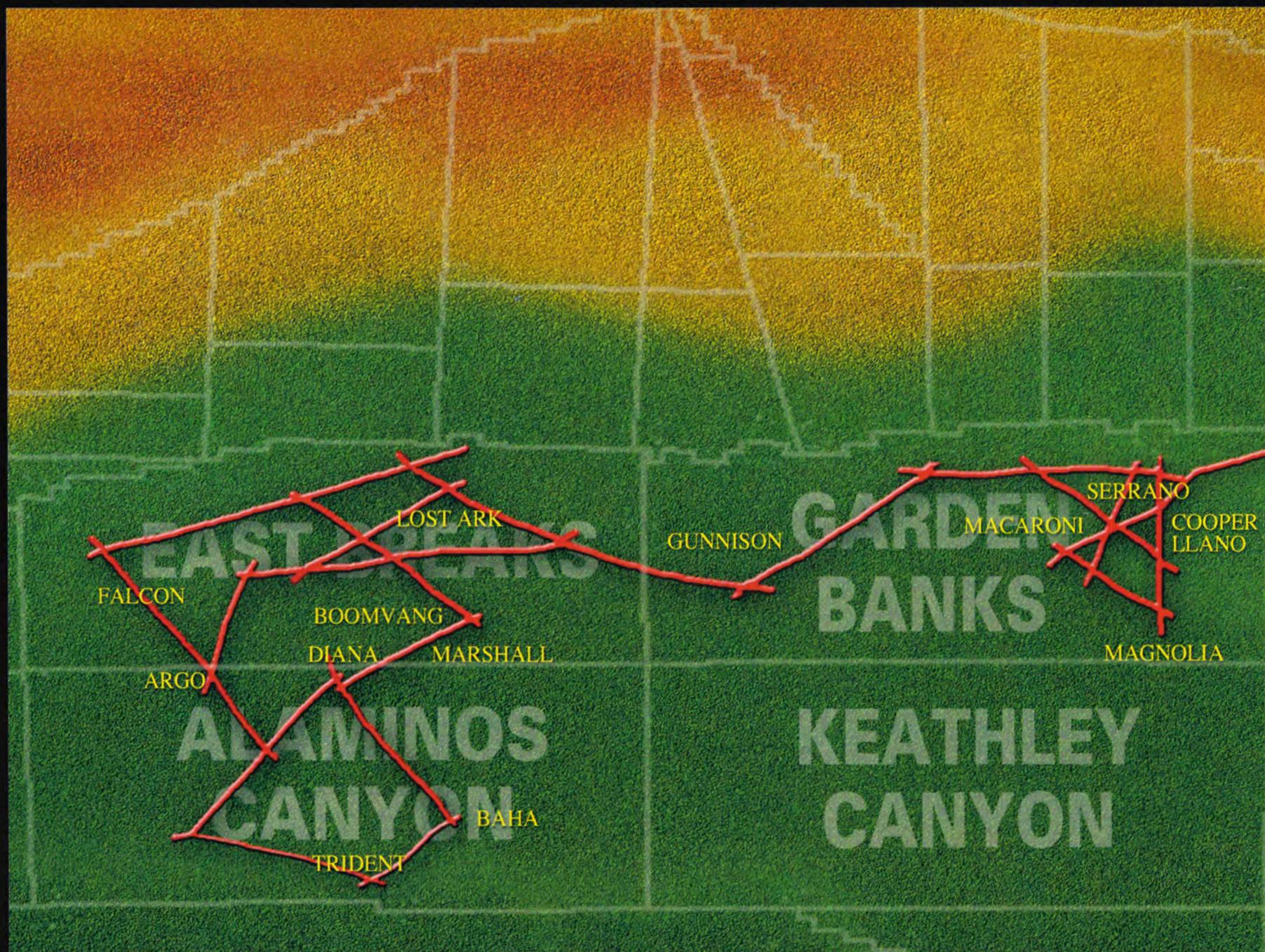
JUNE 2002



Buried Treasure At Your Fingertips



VERITAS HAS THE

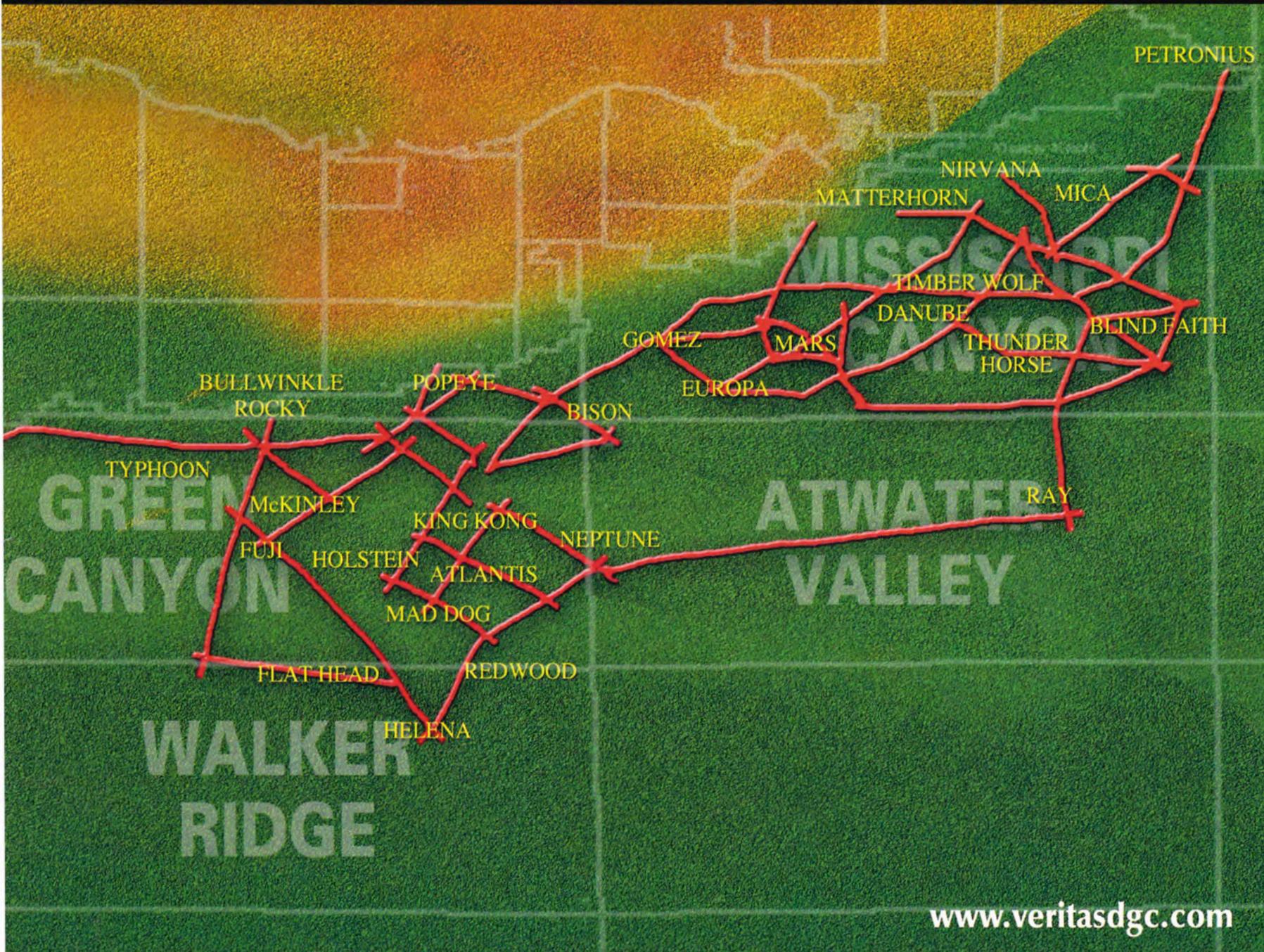


Long-Offset Deepwater Well Tie

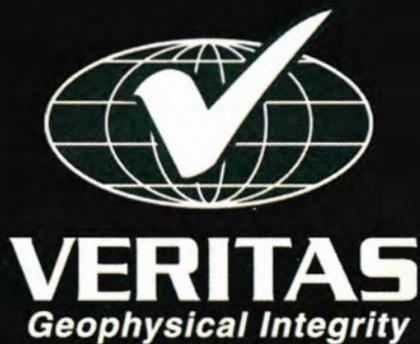
Veritas Marine Surveys adds to its extensive deepwater Gulf of Mexico library with a long-offset 2D well tie survey. This program will initially consist of over 5350 full-fold 2D kilometers in four distinct geographic areas. The Long-Offset Deepwater Well Tie program will deliver 10,000-meter offsets for the first time in the deepwater Gulf of Mexico. Lines will be extended 10 kilometers past the wells to provide full fold data a minimum of five kilometers on each side of the wells. Over 100 wells will be tied in this survey.

A comprehensive Petrophysical and AVO Study will be conducted on selected wells concurrent with the acquisition and processing phases.

E TIES THAT BIND



Program In The Gulf Of Mexico



VERITAS MARINE SURVEYS
10300 TOWN PARK DRIVE
HOUSTON, TEXAS 77072
832/351-8501

On the cover: Once upon a time the world of computers was closed to all but those who had years and years of specialized training – but those days are long gone. Computers are faster, more powerful and – thanks to training classes that can help you no matter how OLD you are – more accessible than ever. They're not just a tool, but a necessity of every geoscientist, and this month is the EXPLORER's annual "Computers in Geology" issue, featuring several stories that bring you up-to-date on the impact on the profession and industry. Cover design by Rusty Johnson; photos courtesy of Rudi Meyer (top left) and Seismic City Corp.

CONTENTS

- Geologists and their companies have become players in a 21st century battleground involving computer systems: **Unix vs. PCs**. **10**
- A commercial computing venture has a noble goal in mind – to **digitize every paper log** in the United States. **14**
- Let's make a deal – online. **Electronic data rooms** are gaining in popularity as a good place for geologists to do business. **16**
- A salt body in the Gulf of Mexico proved the perfect proving grounds for a new geologic technique designed to reduce risk and improve **seismic imaging** both beneath and below the structure. **20**
- Sunday in the park with George (the geologist)? A group of highly-skilled geologists are winning rave reviews as volunteers in the **Geoscientist-in-the-Park program**. **24**
- AAPG secretary Charles Mankin testifies at a congressional hearing on **resource assessment methodology**. **26**
- Northern exposure: AAPG opens its newest training and development center, the **Geoscience Professional Development Centre**, at Canada's University of Calgary. **36**

REGULAR DEPARTMENTS

Geophysical Corner	28	Membership and Certification	40
Business Side of Geology	30	Readers' Forum	42
Foundation Update	32	In Memory	45
International Bulletin Board	34	Classified Ads	45
www.aapg.org Update	35	Director's Corner	46
Professional News Briefs	38	DEG Column	46
Education Calendar	39		

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
Louise S. Durham
Susan Eaton
Ken Milam
Kathy Shirley

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

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

Vol. 23, No. 6

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 2002 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 1855913.

PRESIDENT'S COLUMN

Finis: Closing Out The Year Inventory

By ROBBIE GRIES

Volunteer work should always be fun – and this year, I think the Executive Committee has had some fun, working with this headquarters staff, this Advisory Council and the House of Delegates.

We also got some work accomplished – all the more possible because we were having fun!

That work included:

✓ The budget, always a priority, has been keenly adhered to, and additionally we have cut losses in more operating areas this year. This resulted in paying back more of the monies we borrowed during our 1998-2000 lean years, and still provided incoming president Dan Smith with a healthy base for operations next year.

✓ We are very proud of delivering the AAPG publication digits to members with their dues – but better yet, we are so excited about beginning the work toward a *complete geo-publication aggregate* with all of our geoscience sister societies!

Additionally, we committed to faster, timelier publishing of papers, continuing the high quality peer-reviewed publishing we are renowned for, and also publishing more popular geology books to assist with our public outreach initiatives.

✓ We provided the forum for members and companies to show and sell more prospects and properties worldwide with the advent of APPEX Houston (AAPG Prospect and Property Expo) and APPEX International.

✓ We have reached out to members with our GEM program (May EXPLORER) and our Publications Pipeline (January EXPLORER).

✓ We are creating a series of GeoTours, as a response to member requests.

✓ AAPG started a Member Registry for consultants and job hunters. We are compiling an extensive member survey, to see what else we might add to our "to do" lists!



Gries

✓ Continuing to respond to member needs for technological training, we have contributed to the establishment of three more Technical Training Centers (TTC) in London, Calgary and Vienna (see related story on the Calgary center on page 36).

✓ With a desire to increase communication, we have set up an AAPG committee for the TTC directors to exchange programs, ideas, budgets and business plans.

✓ Our student chapters and student members have grown enormously this year as we have reached out to students all over the world. VGP lectures have almost doubled with 60 in the United States and 57 in 30 other countries.

We have had two very successful Student Expos and are working toward a worldwide Virtual Student Expo!

We are, thanks to the brainstorm of Halliburton's John Gibson, working toward worldwide corporate sponsorship for student membership. And we conducted the first ever Summit on Teaching Petroleum Geology (thank

See **President**, page 6

New Officers Announced

Stephen A. Sonnenberg, manager of the DJ Sub-Business Unit for EnCana Energy Resources in Denver, has been voted president-elect by the AAPG membership.

He will serve as AAPG president in 2003-04.

Also elected were:

□ Peter M. Lloyd, business development director in Kuala Lumpur, Malaysia for Schlumberger NexT, vice president (one-year term).

□ Paul Weimer, of the University of Colorado, Boulder, and a consulting geologist, treasurer (two-year term).

The new officers will take on their duties on July 1, when Daniel L. Smith,

of Houston, assumes the presidency.

Remaining on the committee are Charles J. Mankin, director of Sarkeys Center at the University of Oklahoma and director of the Oklahoma Geological Survey, secretary; and John Lorenz, of Sandia Laboratories in Albuquerque, N.M., elected editor.

Terry L. Hollrah, of Hollrah Exploration, Oklahoma City, will serve on the Executive Committee as chairman of the House of Delegates.

Sonnenberg, a native of Billings, Mont., was president of the Division of Professional Affairs in 1998-99, and AAPG vice president for 1995-96. He also is a Foundation Trustee Associate, and in 1999 he received AAPG's Distinguished Service Award.

Final
depth images
late 2002

GulfSpan | It's underway, so don't miss the boat.



**GX Technology's Image-Driven™
2D speculative seismic program,
spanning the Gulf of Mexico
with the highest quality prestack
depth images**



Do you have every Gulf of Mexico seismic library there is, or are your shelves still a bit bare? No matter. GX Technology's GulfSpan™ regional 2D seismic program is a unique and valuable asset for old hands and new players alike.

Working with a team of recognized experts in Gulf of Mexico geology, we designed GulfSpan with one goal only: to produce superior prestack depth images for superior insight into the basin architecture and geologic evolution of the deep section of the northern Gulf of Mexico.

GulfSpan is the first regional seismic program in the Gulf of Mexico for which depth images are not afterthoughts or add-ons, but the primary deliverable. 3,700 miles of consistent, modern, optimally imaged seismic data traverse key geologic features and deep wells and provide new context for older seismic archives. Every aspect of the GulfSpan program – including survey planning, acquisition management and QC, pre-migration processing and the

latest in both wave equation and Kirchhoff prestack depth imaging – is guided by our Image-Driven workflow. We leave nothing to chance in our quest for the best subsurface images.

We believe that GulfSpan will become the framework of choice for a more thorough understanding of the geology of the deep Gulf of Mexico. To review the GulfSpan program map and the geologic thought behind each line location, please contact GX Technology.



Image-Driven™

24 Years With AAPG

O'Nesky to Step Down

After 24 years at the helm of the financial and administrative interests of AAPG, Donald A. O'Nesky has retired as deputy executive director of AAPG and the AAPG Foundation.

O'Nesky joined AAPG in 1978 as business director after a career in the U.S. Air Force, where he served in numerous overseas administrative assignments and mustered out of active service at the rank of lieutenant colonel.

He was named deputy executive director of both AAPG and the AAPG Foundation in 1986. O'Nesky also has served as special projects director.

He was named executive director of the AAPG Foundation in 1997 and served in that capacity until Rick Fritz was hired as executive director of both AAPG and the Foundation in 1999.

During his tenure as overseer of the association's budgetary functions, O'Nesky played a major role in the growth of AAPG from its annual income of \$2.5 million in 1978 to over \$11 million today, with member services increasing many-fold – all while holding expenses to a minimum.

Known as a "people person," one of O'Nesky's favorite endeavors was helping at the AAPG Bookstore during various meetings, where he could chat with old friends and new acquaintances about the latest of what AAPG has to offer.

And, uncannily, at AAPG meetings and on trips even internationally,

O'Nesky would invariably come across a new acquaintance who had some connection with his hometown – Haileyville, Oklahoma. He holds a bachelor's degree in business administration from Oklahoma State University and a master's in business administration from Troy State University.

In addition to his AAPG responsibilities, O'Nesky has been a high-profile player in the Oklahoma State Republican Party, serving two terms as co-chair of the state GOP, serving as an

elected delegate at two national GOP conventions and is presently chairman for the Oklahoma First District, which includes Tulsa.

O'Nesky also was a member of the Electoral College in 1999, appearing on the presidential ballot as an elector for the state of Oklahoma and later casting his vote for George W. Bush.

O'Nesky and his wife, Mary, will eventually retire to Punta Gorda, Fla. The O'Nesky's have one son, Don Jr., of Tulsa. □



O'Nesky

President

from page 4

you, Hannes Leetaru!), which may lead to an AAPG publication on that very important theme.

✓ We have set into motion not only a strong membership drive, but we also have conducted a Summit on Ethnic and Gender Diversity within AAPG.

✓ Our newly formed International Regions have developed Country Contacts and Team Leaders that will continue the drive for membership, service growth and student members.

✓ Members of the Executive

Committee have succeeded in visiting every section in the United States and every International Region this year in an effort to strengthen communication and encourage the use of services.

✓ Another member service we soused out this year, thanks to Jean Lemmon's Ballot Committee, was the means to electronically ballot (as well as regular mail) so that all members can more readily participate in AAPG governance.

✓ We formed an historic and long overdue alliance with the Geological Society of America, and have plans for many cooperative efforts – this is complementary to the stronger cooperation and interaction we have been developing with SEG and SPE, inaugurating this year joint

Distinguished Lecture programs and (partially) reciprocal memberships.

✓ Committees have been strengthened and revitalized with a huge "new member" campaign conducted by M. Ray Thomasson.

Many members need only to be asked to contribute – and sometimes we have failed to do so. This year we asked many and often! And our reward has been profound.

So now I will move back to the trenches with you. Thanks for all of the suggestions, conversations, volunteer work and incredible ideas!

Robin Luis

Midland Valley

Model Building

Validation and Risk

Structural Analysis

Fracture Analysis

Hydrocarbon Systems

Visualisation

Think Structure...

+44 (0)141 332 2681
+44 (0)141 332 6792 (f)
www.mve.com

Structural Geology Software and Consulting

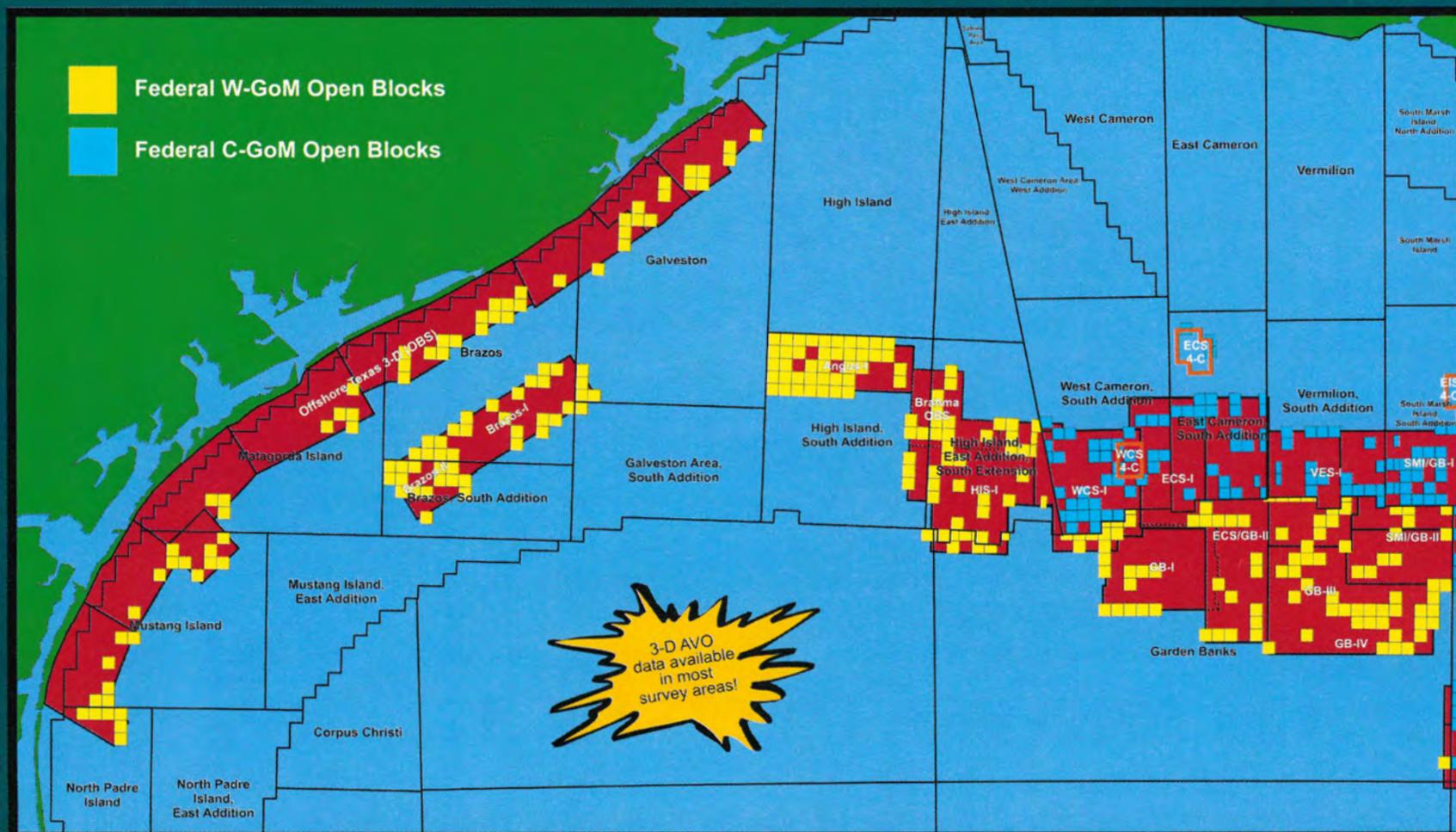
EXPLORATION SERVICES

RESERVOIR SERVICES

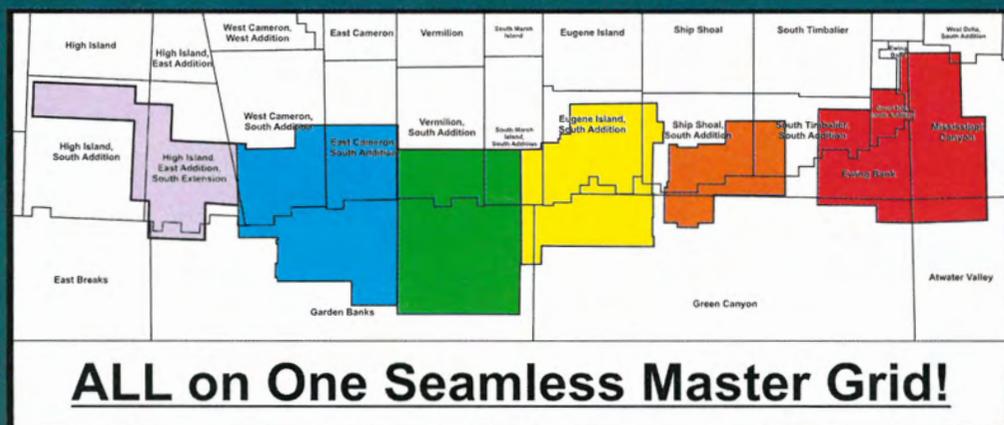
PRODUCTION

MULTI-CLIENT 3D DATA

Opportunity Abounds for the 2002 Western Gulf of Mexico Lease Sale...



And That's Not All. With the 2003 Lease Sales Just Around the Corner, PGS/Diamond Announces the Flex-Trend PreStack Migration Reprocessing (FLEX-R) Project.



The Data You Trust Keeps Getting Better!

PGS **DIAMOND**
Geophysical Service Corporation

738 Hwy. 6 South, Suite 300 • Houston, Texas 77079
Phone: 281-589-6725 • Fax: 281-589-6558

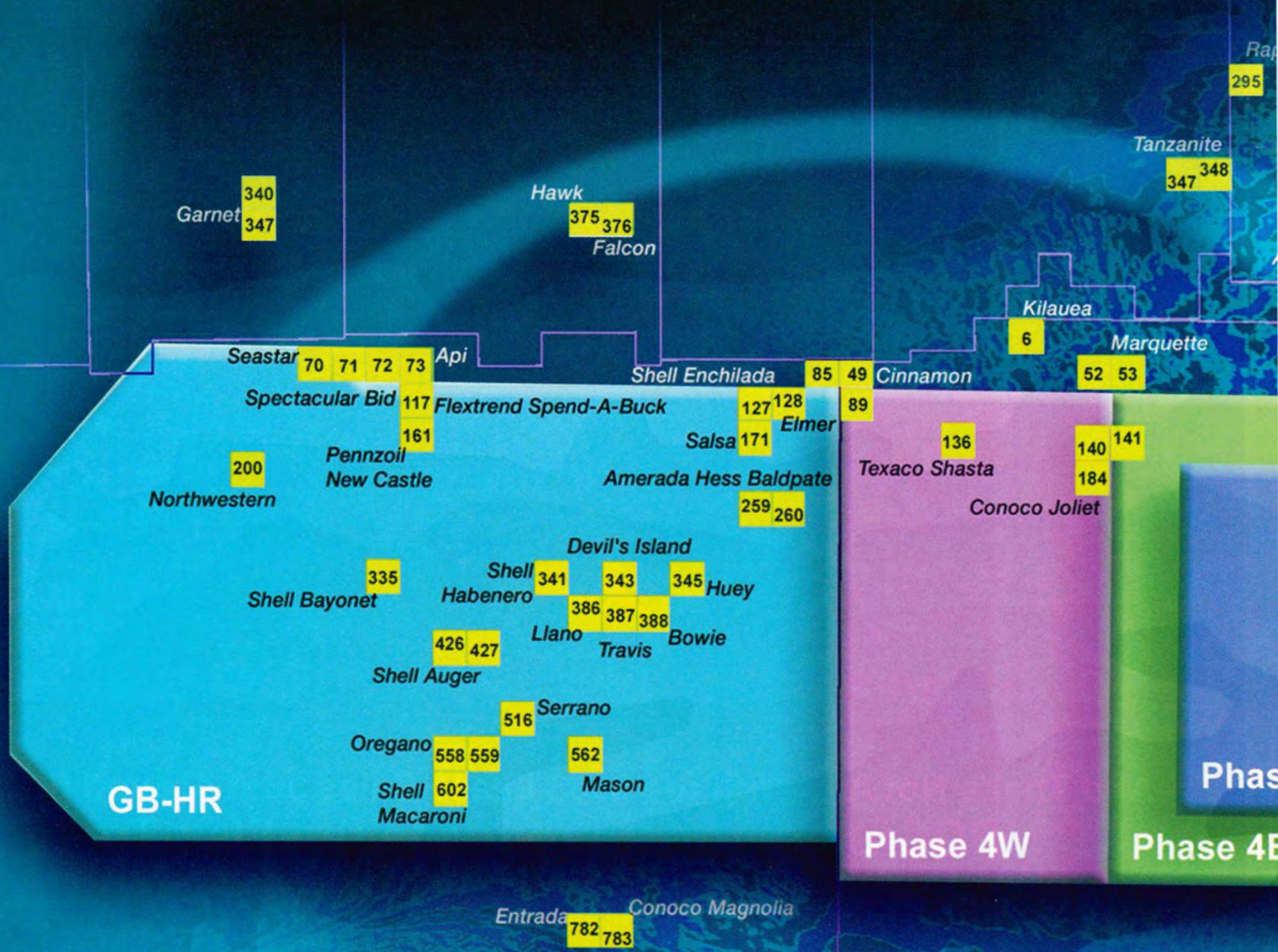
OILFIELD TECHNOLOGY SOLUTIONS

Visit our website at <http://www.pgs.com/> or <http://www.diamondg.com/>

M I S S I S S I P P I C A N Y O N

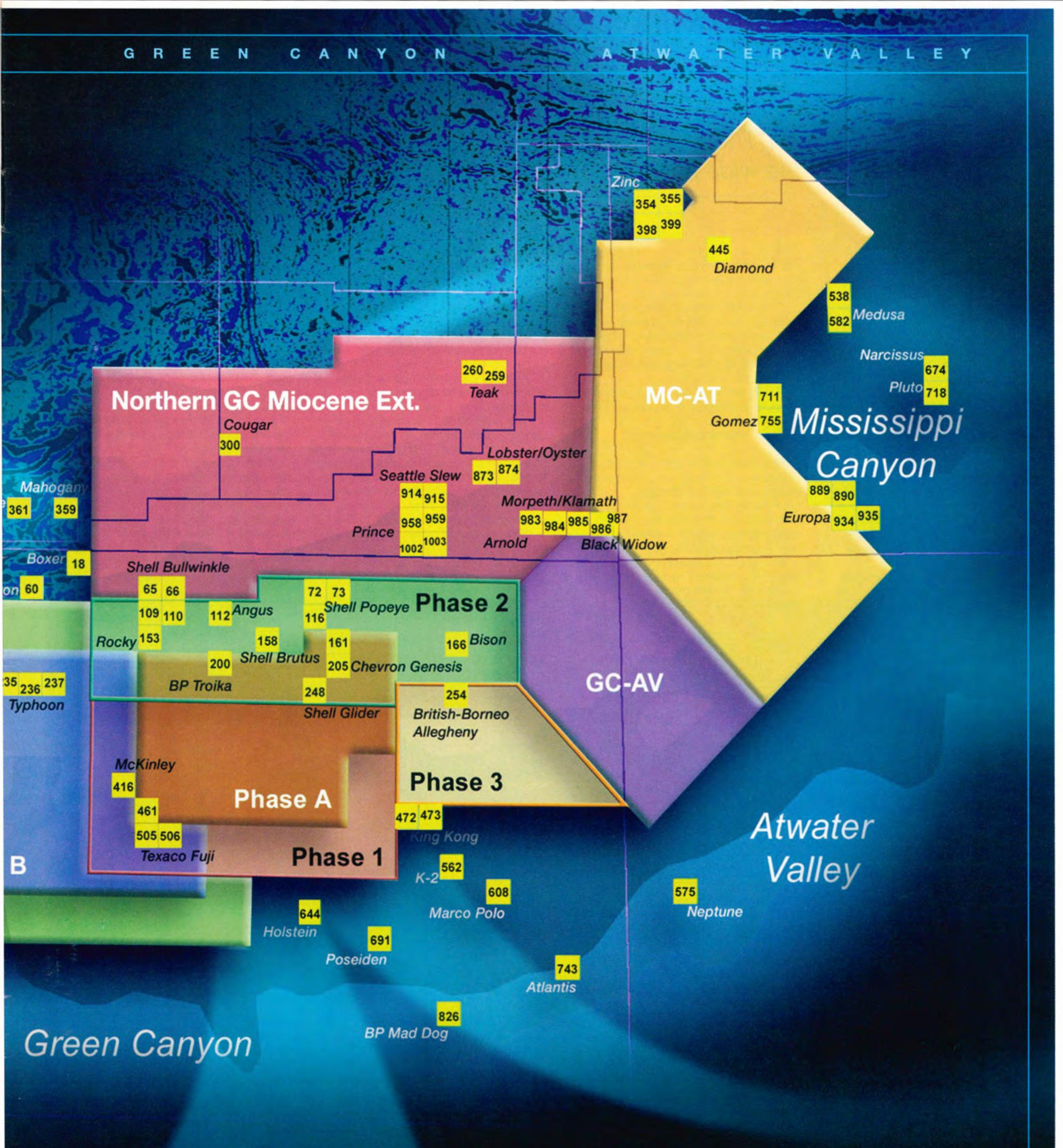
G A R D E N B A N K S

"In-Depth" Spec from the 3D Specialists



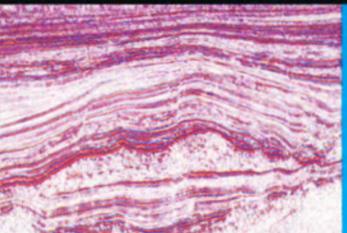
Garden Banks

Phase I	7,200m streamer PSTM	91 blocks
Phase II	7,200m streamer PSTM	78 blocks
Phase III	7,200m streamer PSTM	38 blocks
Phase GC-AV	7,200m streamer PSTM	73 blocks
Phase 4E	8,200m streamer Kirchhoff PSTM	161 blocks
Phase 4W	8,200m streamer Kirchhoff PSTM	112 blocks (Acquisition 80% complete)
Phase GB-HR	9,000m streamer PSTM 25m X-line!	317 blocks (In progress)
Phase MC-AT	8,000m streamer PSTM	171 blocks (In progress)
Northern GC Miocene Ext.	8,000m streamer PSTM	164 blocks (Proposed)
Phase A	3D PSDM 500m x 500m grid	75 blocks (In progress)
Phase B	3D PSDM 500m x 500m grid	109 blocks (Q1 2003)



For more information, please contact Charles Bowen at (1) 281 646 2559 or email cbowen@cgg.com or Bert Chenin at (1) 281 646 2560 or email bchenin@cgg.com

Phone: (1) 281 646 2559
Email: cbowen@cgg.com
www.cgg.com



UNIX – The Challenger is Challenged

PCs' Muscle Makes It a Contender

By KATHY SHIRLEY
EXPLORER Correspondent

As dawn broke on the 1990s, geoscientists at large oil companies around the globe were heralding desktop Unix computer systems, the latest breakthrough in computer technology, as a creation that would soon send massive centralized workstations the way of the dinosaurs.

In fact, that shift materialized.

But today, just a mere 12 years later, Unix technology is being challenged by that other unassuming machine everyone has on their desktop both at the office and at home – the personal computer.

Welcome to the always-evolving world of computers.

"The magic of Unix was that for the first time everybody could have a machine on their desktop – there was no more fighting over the centralized workstation," said Murray Roth, vice president of research and development for Landmark Graphics. "Suddenly geophysicists had interpretation and other capabilities right on their desk."

But then the geologists and reservoir engineers and others wanted the same capabilities, so additional applications were added.

Unix technology was a great enabler for the expansion of software technology that gave depth and breadth to the exploration and production process.

"In the past, PCs were never a contender in this arena because they were slower, less capable central processing units than Unix," Roth said,

"There are fewer and fewer barriers to the wide proliferation of PCs as an option."

"but PC advancements have far exceeded the growth of Unix, and today are actually at a crossover point.

"Advanced personal computer hardware, along with dramatically improved graphics capabilities – thanks to gaming technologies – have made PCs a viable alternative for all geoscience applications," he said.

"There are fewer and fewer barriers to the wide proliferation of PCs as an option."

Gaining Momentum

Bret Fossum, a senior geological advisor with Conoco in Houston and the chairman of AAPG's Computer Applications and Internet Committee, said the transition to PCs has begun within oil companies because of the efficiencies that the user community gains with PCs.

"It's not a total solution yet, but it's gaining momentum," he said of new PC technology. "A PC platform provides general efficiency. You don't have to deal with two computer systems."

Plus, he added, PCs offer the advantage of portability.

"I have a laptop I consider a workstation," Fossum said. "I can go on

the road and make a workstation-type presentation. You can't do that with Unix."

Also, PCs compare favorably with Unix systems in terms of speed.

"When companies are looking to staff projects and want those teams to be as efficient as possible, making computers faster is important," he said.

And increasingly complex software programs demand bigger, faster machines.

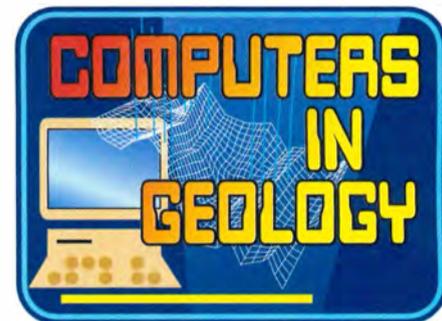
"For example, 3-D visualization is a common application in the geophysical and geological world today," Fossum said. "A typical Unix-based visualization system runs \$1 million with three projectors, multiple processors and other hardware. You can get a fairly decent PC-based visualization system for under \$30,000.

"There is the potential for some serious cost savings, depending on what you want to do with the system."

Let's Talk Money

Today some geoscience software companies are building their tools exclusively on a PC platform.

When the founders of Petrel established the company in 1996 they



decided to build the company on the Windows platform, according to Erik Wulff-Pedersen, sales manager for the firm. Software development turned out to be much more efficient on Windows, and the rapid development of PC-based processors and graphic cards convinced the firm that PC/Windows was the future for 3-D modeling.

"The PC solution is so much better from a user standpoint, because everybody is familiar with Windows in general," Wulff-Pedersen said. "That means less training for new hires and a smoother workflow in all aspects of business."

"Plus," he added, "PC processors and graphics cards are now faster than Unix systems."

In addition to those advantages PC-based systems bring to the end user, programmers also claim they can program up to 10 times faster on PCs

See **Computer Wars**, page 12

"All features are a go."

Developers of the Next Generation of Exploration/Reservoir Management Technology.

The KINGDOM Suite+

Summer 2002

EarthPAK
Geological Interpretation Module

EarthPAK merges the worlds of geology and geophysics to create a very flexible platform for conducting geological interpretation on any scale from regional studies to detailed reservoir characterization.

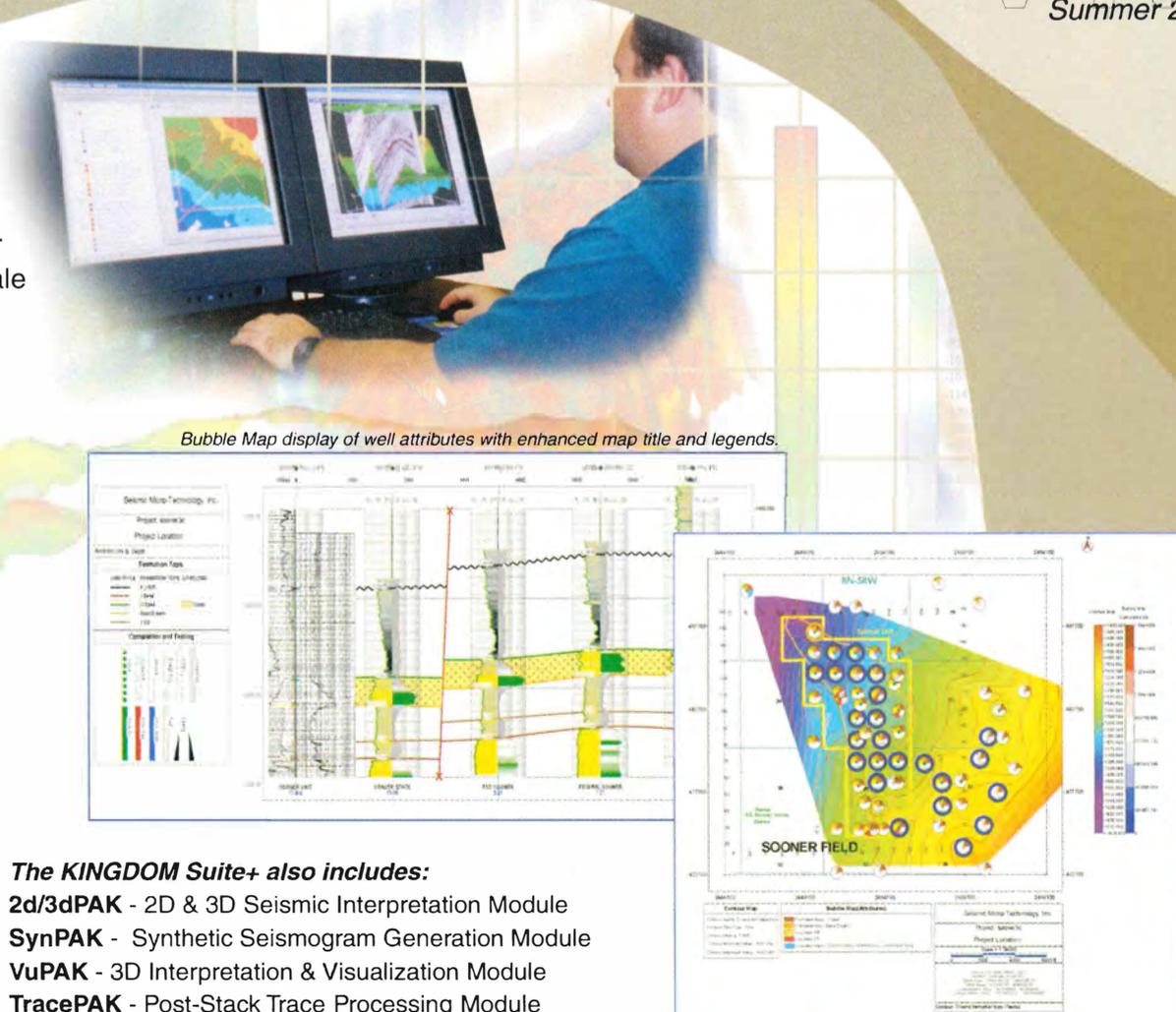
- C**reate presentation-quality basemaps, cross-sections, crossplots, and histograms
- Q**uid data with enhanced algorithms such as natural neighbor, kriging, and collocated cokriging
- G**enerate bubble and attribute maps from well information, zone attributes, log data, and production data
- I**mport, edit, display, and correlate digital or raster log curves in cross-sections
- S**upport multiple fault segments in the cross-section, each with different vertical separations
- A**nalyze log curves with calculators including log statistics, log normalization, and predefined or user-defined equations

With **The KINGDOM Suite+**...
you make the right move.

SEISMIC Seismic Micro-Technology, Inc.
The KINGDOM Company
www.seismicmicro.com / +1 713 464 6188

The KINGDOM Suite+ also includes:

- 2d/3dPAK** - 2D & 3D Seismic Interpretation Module
- SynPAK** - Synthetic Seismogram Generation Module
- VuPAK** - 3D Interpretation & Visualization Module
- TracePAK** - Post-Stack Trace Processing Module
- ModPAK** - Seismic Modeling Module



Bubble Map display of well attributes with enhanced map title and legends.

Stratigraphic cross-section with faults, raster and digital well logs.

Uncover the hidden value in your assets



Paradigm Reservoir Studies extract information from your reservoir that other studies simply miss

Paradigm, the premier provider of advanced petroleum geoscience and drilling technology, leverages its expertise to provide you with exceptionally accurate information about your reservoir.

Paradigm Reservoir Studies combine our geoscience expertise and experience in exploration and production with our leading interpretation and reservoir analysis products, including VoxelGeo, Stratimagic, Geolog and Vanguard. **Together, they extract more knowledge from your data, helping you to make better-informed decisions.**

Our skilled personnel combine intimate knowledge of your region with global capacity and commitment. Together with our Geophysical Services, we provide the most comprehensive solutions in the market.

From reservoir characterization projects to complex field studies, Paradigm is your partner in maximizing your reservoir value.

Available to you through our worldwide service centers.



Reservoir Studies | Geophysical Services | Well Planning and Drilling | Reservoir Characterization and Production | Reservoir Characterization and Production | Reservoir Characterization and Production

Please visit us at <http://www.paradigmgeo.com> or call:

USA +1 713 393 4800	Canada +1 403 750 3535	Latin America +58 212 991 7264	Europe/Africa/Middle East +44 1483 758 000	CIS +7 095 933 4440	Asia Pacific +61 8 9327 1800	China +86 10 6465 4870
------------------------	---------------------------	-----------------------------------	---	------------------------	---------------------------------	---------------------------

Several Factors Can Influence System Decisions

There are plenty of factors in the Linux vs. Windows debate.

Both have advantages, according to Murray Roth, vice president of research and development for Landmark Graphics.

✓ Linux's biggest advantage: It's the same technology that's been used on Unix and can actually work in a hybrid environment, making the transition from Unix to Linux smoother.

✓ The biggest advantage of Windows is its familiarity.

"People have been using Windows on its business desktop for years, so the workflows are the same," Roth said. "Both these systems offer the capability to bring together the business and technical aspects of a company."

Of course, despite the increasing advantages of PC technology, there are corporate barriers – and among the most important is the cost associated with this type of massive shift to a new system. Most companies are still heavily focused on Unix technology because the firms have a huge investment in those systems, according to Jim Sledz, director of exploration information management strategy with Conoco.

"With the investment in Unix we have to look at this closely," he said. "When the end users start touting moving to a PC-based system you have to challenge them. What are you getting that you can't do on Unix today to justify these costs? Right now there's not that much. PC systems are faster, but I can

get a faster Unix machine for a lot less than what I have to invest in supporting a whole new PC system."

Also, the issue of limited memory on PC systems is critical for oil companies.

"Data volumes are constantly increasing, and everybody wants to see all that data on their workstation screen at the same time," he said. "To get these bigger volumes and bigger cubes you have to use Unix."

Bottom line for him: "There's going to have to be that leap in memory capability for PC systems before it can make any real inroads."

Often it's replacement cycles that drive oil companies' needs, he added.

"If I just bought a new system, then I'm not going to be interested in

changing," he said. "But if my company is at the point of changing out the corporate system, then I'm going to be interested in any new systems that can improve my capabilities."

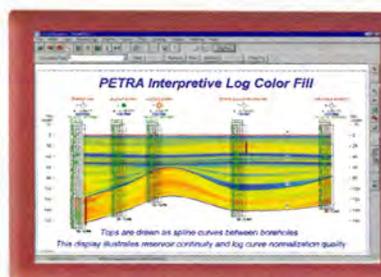
"These are business-based decisions within large oil companies. You can't suddenly just decide to spend \$5 million to convert to a PC-based system," he continued. "I have to put a business case forward and compare that with other issues within the company, so I better have a compelling argument."

"You have to take a hard look at what you're getting for that investment, and what is the rate of return."

— KATHY SHIRLEY

PETRA[®]

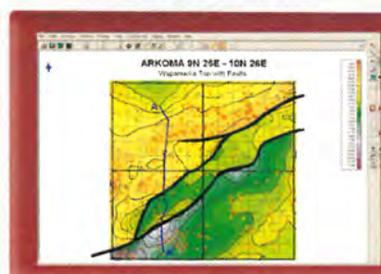
The PC System with Proven Results



CROSS SECTION

CROSS SECTIONS

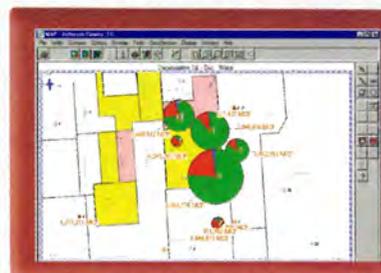
Structure and Stratigraphic
Digital and Raster Logs
Deviated Wells
Interactive Formation Correlation
Log Curve Editing
Depth Shifting
Interpretive Overlays



CONTOUR MAP

MAPPING

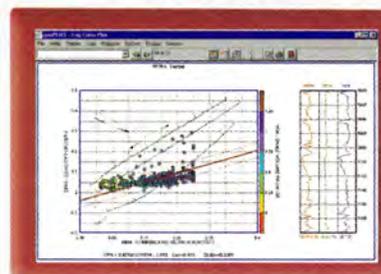
Contours w/Faults
Contour Editing
Commercial Land Grids
Geo Referenced Images
Import Digitized Contours
Log Curve Maps
Grid Operations - Volumetrics



BUBBLE MAP

PRODUCTION DATA

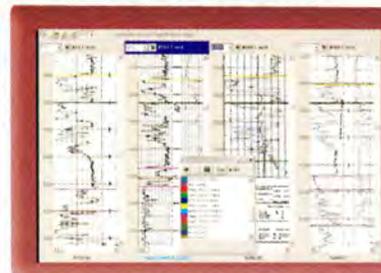
Monthly Streams
Decline Curves
Cums (first, last, avg.)
Bubble Maps
Production Charts
Compute EUR, RR etc.



LOG CROSS PLOT

DIGITAL LOGS

LAS and LIS - Editing
Normalization
Multi-Well Analysis
Compute Reservoir Properties
Cross Plots/Histograms
Batch Import



RASTER LOG

RASTER LOGS

Easy Top Picking
Auto Raster to Digital
Raster Log Slip Box
Quick Net Sands Pick
Batch Import

Why PETRA[®]?

- Easy to Learn and Use
- Powerful General Purpose Tools
- Exceptional Info Extraction Features
- Tightly Integrated Modules
 - Mapping
 - Cross Section
 - Log Analysis
 - Decline Curve Analysis
- Built around a powerful Database
 - Simultaneous Access by Multiple Users
 - Easy to Import Broad Range of Data
 - User Extendable
 - Multi-Well, Multi-Zone
- Frequent, User-Driven Updates
- Geared for Interactive Workflow
- PC Based
 - Win 98/NT/2000/XP
 - Stand-alone and Network Versions



geoplus[®]
CORPORATION

Prove it to yourself!

Download a trial version from our web site at
<http://www.geoplus.com>
or call 888-738-7265 for more product information
In Houston call 713-862-9449

Computer Wars from page 10

compared to Unix.

"That's a big advantage," he added, "because it allows us to develop and implement our tools much faster."

But what is the biggest advantage for PC-based systems?

Price.

"We've conducted a price performance analysis on a wide range of applications and across the board we are seeing a 10-fold baseline price performance difference," Roth said. "We now have PC systems that are two to three times faster and often five times less expensive than a fairly comparable Unix machine – that even surprised us."

"This is going to be a staggering value proposition to information technology departments and end users," he added.

"Today we can cut IT costs by a factor of 10 and can run the exact same applications you have come to love over the years on the Unix systems."

Some Potential Problems?

While PCs have gained tremendous ground on the traditional Unix systems, there are still problems that must be overcome before the industry sees wide proliferation of PCs for geoscience applications.

First, memory is an issue. Today PCs are limited to an effective 32-bit operating systems compared to 64-bits with Unix.

"The 64-bit operating system gives you the capability for a great deal more memory and large seismic volumes, for instance, require a lot of memory," Fossum said.

Roth agreed.

"PCs today are confined to four gigabytes of memory because of the 32-bit operating system architecture," he said. "When PC hardware capabilities reach 64-bit – and that will be soon – there will be very little reason to be on Unix."

But another barrier to PC proliferation within oil companies is that most firms store their data in the Unix environment.

"In the absence of that link to the corporate database we build our own databases on our PCs – but that's not very efficient," Fossum said. "We need to be connected to the corporate database so the work can flow back and forth."

"Plus, it's important to retain all the corporate knowledge base," he added, "so a link must be developed to allow all work to be maintained in the corporate database."

Wulff-Pedersen agreed that there has been some reluctance to go to the PC world in oil companies because PCs don't have the database capabilities that have

See **Systems Conflict**, page 33

Astonishingly Easy

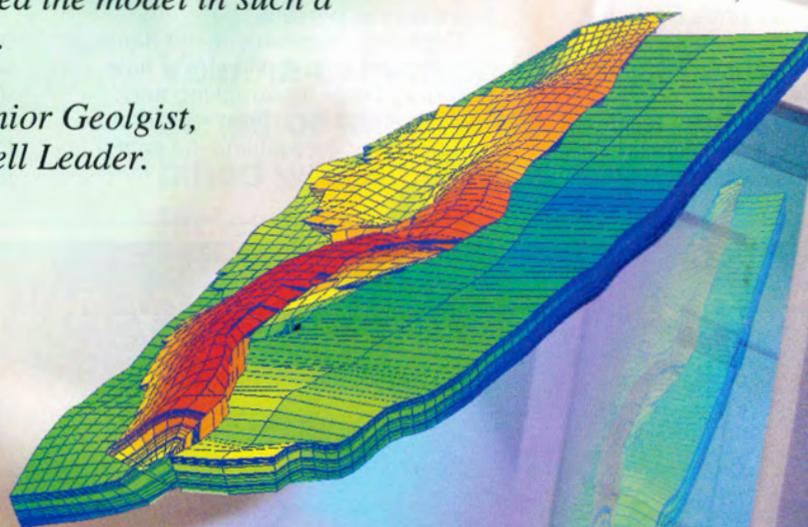
GOCAD

The Fastest Route to Profitable Modeling

easy (ē'zē) *adj.* simple; something not difficult; uncomplicated, got mastered in a way.

"Undoubtedly, this is the most impressive piece of grid building I have ever seen. The grid includes sloping faults, stacked reservoir layers, repeat sections, and overturned stratigraphy. Given the complexity, I'm astonished that we successfully completed the model in such a short space of time".

*David Lynch, BP Senior Geologist,
Barco Guadalupe Cell Leader.*



Easy to Use, Cost Effective, Accurate, Multi-Platform

- Rapid model development.
- Consistent earth model for multi-disciplinary teams.
- Extensive and rich multi-vendor systems integration.
- Comprehensive workflow automation.

www.t-surf.com

sales@t-surf.com

Houston +1 (713) 787 0746
Paris +33 (0)1 49 49 05 10
Dubai +971 (0)4 391 2630

T-SURF 
the GOCAD Company

*Logs Being Preserved***Digits Come to 'Classics' Rescue**

By KEN MILAM

EXPLORER Correspondent

When David Armitage talks about his company's newest project, his zeal comes through the telephone line like an old-fashioned gusher.

The A2D CEO says the "Log Preservation Initiative" is more than a commercial effort. It's an attempt to create a nationwide database that preserves a strategic national asset.

The initiative seeks to digitize logs from the original Mylar film. A2D offers to scan and digitize the logs, giving the owners free online access to the data. The company then offers depth-corrected raster images for a fee from its database to interested clients.

Armitage likens the project to efforts by the movie industry to preserve deteriorating classic films.

While several companies provide digitizing and related services, A2D's mission is to "create the world's first and largest repository of irreplaceable log data," Armitage said. He said the company's vision is to see every paper log in the United States digitized.

It's a worthy goal, according to AAPG's Robert Merrill, chairman of the AGI National Geoscience Data Repository Committee, which is charged with finding ways to preserve geoscience data.

Digitizing solves a major issue in preserving the data, Merrill said: physical storage costs.

"As an exploration geologist, I see no reason to preserve the film" once it is digitized, Merrill said, adding that the digital data is backed up in computer systems, usable with today's technology and readily available.

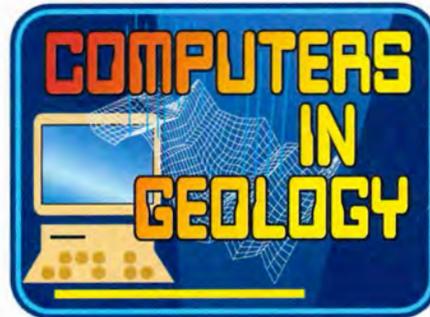
While states have an interest in encouraging drilling, preservation efforts have been haphazard in the past, Armitage said, and mergers and acquisitions have often led to huge non-indexed collections of logs in central or disparate locations.

Merrill concurs that the Mylar logs are the most accurate source for digitizing. Subsequent paper copies can be stretched, creased or otherwise distorted and corrupted, he said.

"The operator's original film is the most pristine copy of a log," said Dave Kotowych, A2D president. "This is what we are endeavoring to capture and preserve. It is in everyone's interest to preserve the integrity of one of the largest and most valuable data assets in the oil and gas industry."

"In the end," he said, "exploration geologists will have access to first generation data, better than any other that exists at present."

Digitizing also helps avoid damage that can occur to the film over time, including creasing, cracking and image deterioration from temperature and humidity fluctuations, he said.

**Step by Step**

Armitage, who joined A2D as a consultant in October and became CEO two months later, said the nine-year-old, Houston-based company has become a manufacturer, producing "digits instead of widgets."

The company processes about six gigabytes of data daily, or about 80,000 logs per month, he said, and tasks that once took 18 months have been trimmed to one month.

The process involves three major steps:

☐ Teams are dispatched to scan the original film, a job that can take hours or weeks, depending on the size of the archive.

☐ The scanned data is transmitted via the Internet to one of two A2D facilities in India for the most labor-intensive phase

of the work – indexing, depth-calibrating and digitizing.

☐ The information is transmitted back to Houston, where it is verified and put through the company's quality control processes.

Armitage said the company's proprietary processes are involved in four major areas:

☐ Software used to scan the data.

☐ Quality control, where errors as small as 1.5 to 2 millimeters can be spotted.

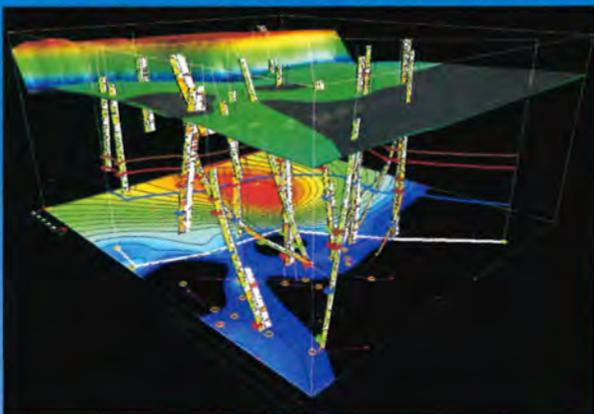
☐ Online availability and distribution through one of the industry's largest e-commerce sites.

☐ Software tools to enhance the customers' ability to use the data.

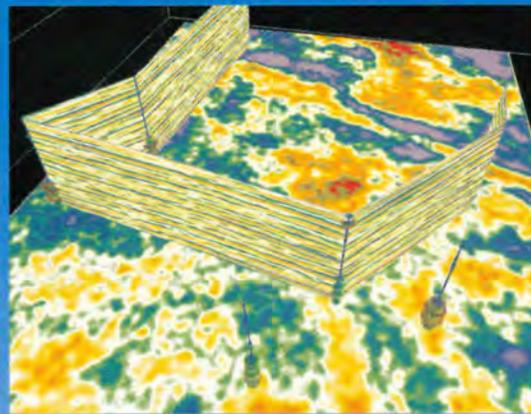
Stories abound in the industry of companies improving their productivity as they move to raster and vector data and away from paper.

In the "good old days," finding well information could involve a trip to wherever the needed logs were stored and copying 20 or 30 feet of logs, Armitage said. Current technology allows the geologist to locate the needed well or wells on the computer screen and simply click to pull up a view of the log and related data.

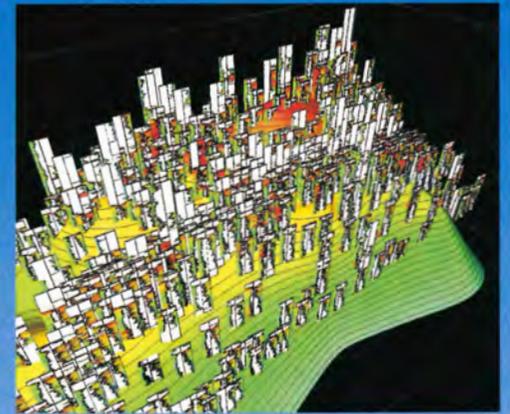
Industry response is an acknowledgement of "how precious this data is," he said, adding that if an original log should be lost or destroyed, "it's like the well was never drilled." ☐

Recon - the revolutionary new 3D well log correlation tool

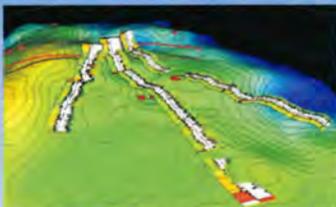
One-step seismic horizon adjustment to well logs



Correlate vertical and horizontal wells using seismic in 3-D



Visualize and interpret thousands of wells in 3-D



Correlate horizontal wells directly in 3-D

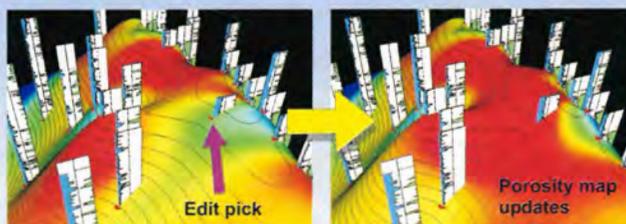


Integrate faults and horizontal wells

- ☑ 3D well log visualization and correlation
- ☑ Scalable from Sun and SGI desktops to visualization centers
- ☑ Landmark OpenWorks™ compatible



Correlate unlimited number of wells



Interpret with automatic, real-time updates



Please contact AGM to receive a free Recon presentation DVD

Houston +1 713 952-4141
info@austingeo.com

AGMwww.austingeo.com



COMING SOON - PETREL₂₀₀₂

PetrelTM₂₀₀₂ represents another great forward step in enabling you to revolutionize the integration of data from all the subsurface disciplines

Interpret seismic in classical 2D windows or in 3D space, extract volumes, run multiple facies scenarios, calculate Monte-Carlo volumetrics, and visualise dynamic simulations...

Volume extraction for identification of zones or facies objects can be combined with stochastic and deterministic facies and property modeling.

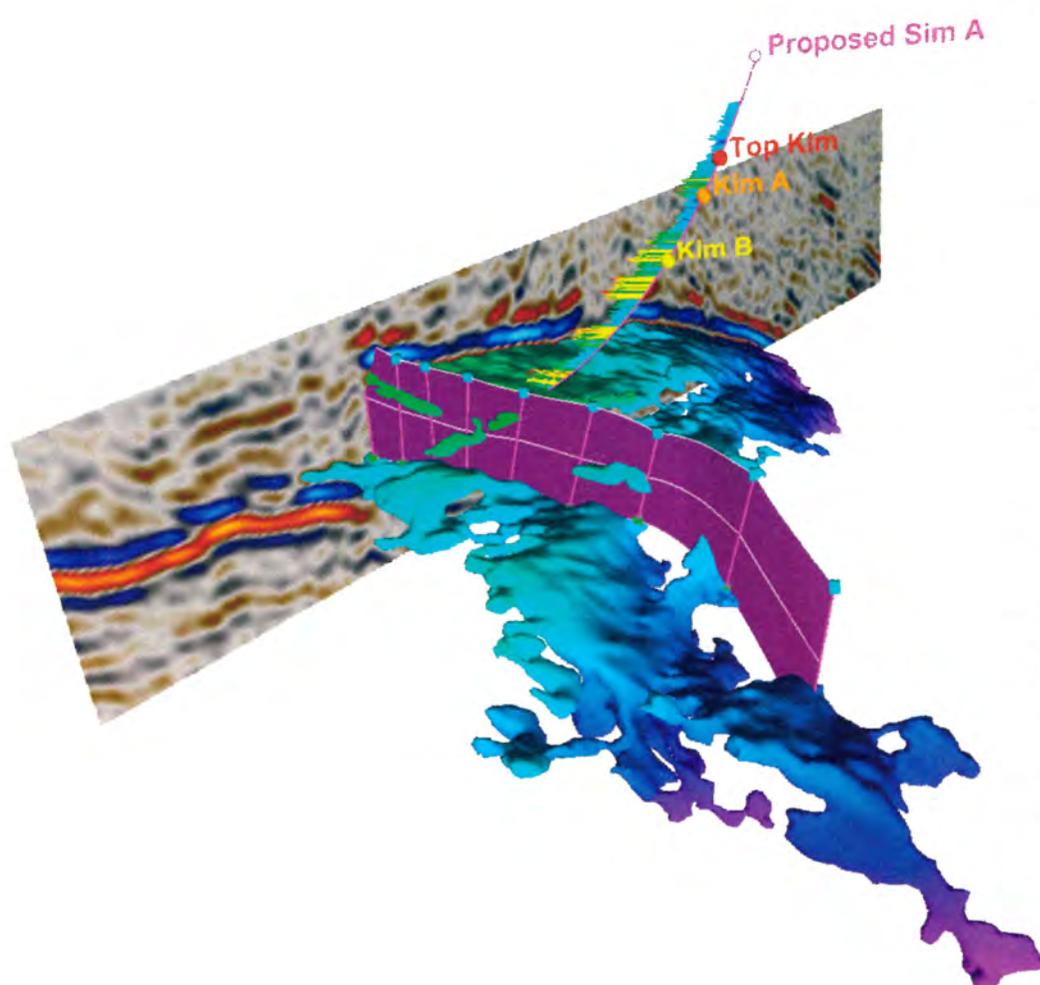
No other software will allow you to interact this closely with all your data with so many analytical tools and modeling routines.

Send an e-mail to houston@technoguide.com in Houston, Phone: +1 281 558 6003

calgary@technoguide.com in Calgary, Phone: +1 403 237 8385,

Visit our website, or contact your local office to arrange a pre-release presentation.

www.technoguide.com



"Shell U.K. Exploration and Production successfully used Petrel to make a structural model of the company's highly complex North Cormorant reservoir"

A New Marketplace Emerges

Data Rooms Are In a M/A/D Mood

By LOUISE S. DURHAM
EXPLORER Correspondent

Besides their usual obsession with the predicted temperature next week in Boston or wherever, the NYMEX oil and gas futures traders now are fretting about far more weighty matters, e.g., oil embargoes and the ever-changing fuse length on the powder keg known as the Middle East.

And there's that pesky on-again/off-again coup against the president of big-time oil exporter Venezuela, with its gaggle of disgruntled oil workers.

But let a cheater or two from OPEC *et al* decide to grab a bigger piece of the quota pie, and a "war premium" and more can be lopped off the price of crude essentially overnight.

Unrelenting uncertainty permeates the industry, yet the oil and gas finders continually rise to the challenge to create value via myriad avenues.

One of the more popular methods lately centers on the mergers, acquisitions and divestitures (M/A/D) arena.

Buy low, sell high is the mantra – but there are no guarantees.

"There were actually two markets in 2001," said Robbin Jones, director of A&D solutions at IndigoPool.com. "The early one was robust, and then it slowed down.

"Buyers later in the year didn't believe the forward price curve, so we had a valuation gap between buyers and sellers."

Now that commodity prices have come off the lofty levels reached last year, Jones sees the market heating up.

"Companies that weren't willing to sell assets because of the great cash flow they were getting are now willing to sell, thinking they'll get a fair price," he said. "And they want to put the money into other assets that will give a better return."

Fueling the Trend

One way to contend with the roller-coaster price scenario when contemplating M/A/D activity is to ignore it.

"You have to look through the volatility, pick a long-term price case and stick with it," said Aubrey McClendon, chairman and CEO of Chesapeake Energy, which has a voracious appetite for M/A/D.

The company's latest foray into this arena is the purchase of its Oklahoma City neighbor, Canaan Energy, which is expected to be completed in the third quarter of this year.

Chesapeake's penchant for buying companies and assets is aptly reflected by its track record of \$1.6 billion in acquisitions, or about two-thirds of its asset base. These all were placed on the books since 1998 when it began reinventing itself to focus on one commodity (natural gas), and one area (the Mid-Continent, where it currently is the second largest gas producer, according to McClendon).

He noted several Wall Street-fueled trends in the industry's ongoing consolidation:

□ Investor demand that companies have access to capital in good and bad cycles is driving a lot of the acquisition of small- and mid-cap companies.

□ Small and mid-size E&P companies aren't efficient public vehicles because cost of capital is high, they don't tend to hedge, etc. So the financial risk of owning a small E&P company has been magnified, unless they have a story that lets them command a premium multiple

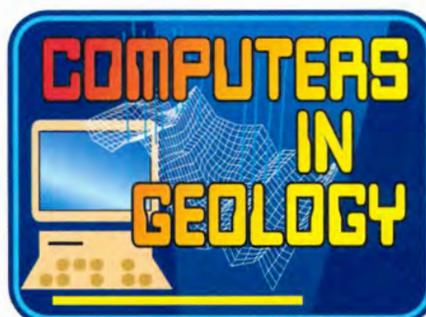
during those two-three years when everyone is excited about them.

□ The days of the \$50 million IPO are over.

□ The majors are having to get bigger to compete globally, which will lead to less concentration in the United States – and put a number of assets up for sale in the next few years.

Musical Chairs

Still, McClendon doesn't envision an industry comprised of only a few super-

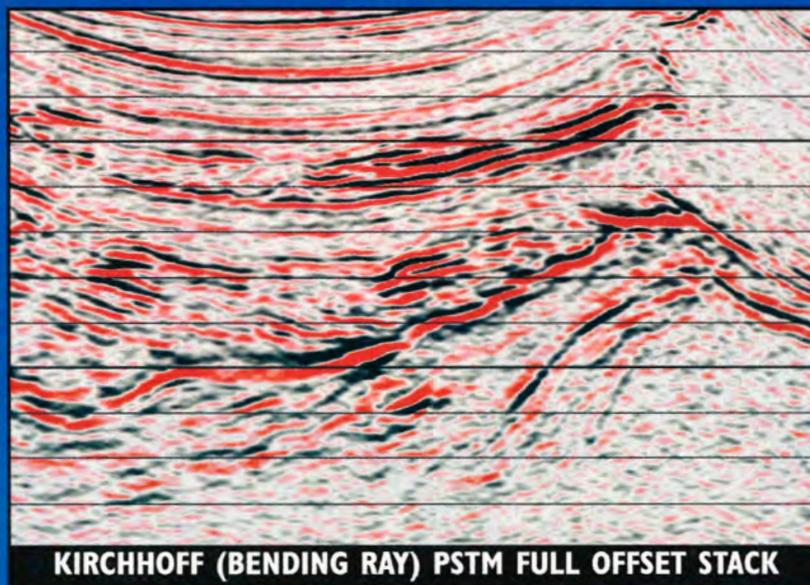


majors. He predicted there always will be a place for the smaller companies – just maybe not in the public sense.

Many of these companies will be spawned by the now-small entities growing to the stage where they will merge or be acquired, leading to certain professionals leaving to acquire funding to start over again.

"The whole food chain feeds on itself," Jones said.

continued on next page

Recently Completed PSTM (Kirchhoff)

KIRCHHOFF (BENDING RAY) PSTM FULL OFFSET STACK

434	435	436	437	397	398	399	400
478	479	480	481	441	442	443	444
522	523	524	525	485	486	487	488
566	567	568	569	529	530	531	532

661	662	663	664
705	706	707	708
788	789	749	750
832	833	793	794
876	877	837	838
881	882	883	884
925	926	927	928
1009	969	970	971

EAST BREAKS**ALAMINOS CANYON****KIRCHHOFF PRE-STACK TIME MIGRATION (.5 km. Grid)****PRE-STACK DEPTH MIGRATION (.5 km. Grid)**

Geophysical Pursuit has available for license recently completed PSTM (Kirchhoff) reprocessing on approx. 150 blocks in East Breaks/Garden Banks (EB/GB), and Pre-Stack Depth Migration (PSDM-.5 km. grid) on the remaining blocks within our Western Gulf of Mexico Survey. Our total high fold coverage in the Western Gulf of Mexico totals 705 blocks of long offset (8,000 meters) 3-D seismic data.

For more information on these or any other GPI surveys give us a call or email us at gpi@geopursuit.com.



Geophysical Pursuit, Inc. (Houston)
3501 Allen Parkway,
Houston, Texas 77019
Phone: 713-529-3000,
Fax: 713-529-5805

Geophysical Pursuit, Inc. (Metairie)
3850 N. Causeway, Suite 1345,
Metairie, Louisiana 70002,
Phone: 504-828-1133,
Fax: 504-828-1130

www.geopursuit.com

continued from previous page

"Right now, the total number of mergers is decreasing, because it's like musical chairs," he added. "Each time the music stops, there's another chair taken away and fewer playing in the game."

"But I see the A&D market continuing to grow as a result of the huge mergers we've seen beginning in the late '90s," Jones continued. "Sooner or later these large combinations will have to dispose of properties that are no longer core to them."

"We haven't yet seen the floodgate release of all these properties onto the market, and it's got to happen."

Mark Schneider, senior director and AssetExplorer product manager at Petroleum Place, concurs.

"A lot of companies that did major acquisitions are beginning to come out of

their pooling restriction periods, when they were unable to sell their assets for a fixed period of time," Schneider said.

"So in the next little bit of time we'll see people returning to portfolio analysis," he continued, "taking segments of their asset base and putting them through auction or in a negotiated sales package, or marketing them through E-brokered services."

24/7

When this happens, expect the Internet to play a key role, with some companies destined to be at the forefront of the action.

Indeed, oil and gas industry E-commerce marketers who facilitate asset transactions via the Internet seemingly occupy a win-win niche – whether it's a buyer's or seller's market.

Online auctions have proven to be an

"Our floor auctions are really a hybrid, incorporating online as well, but 20 percent of our closings are through our purely online auctions."

efficient way to buy and sell properties, according to Rich Herrmann, senior vice-president of technology and business development at Petroleum Place, which hosts these events and a variety of other type enterprises.

"We've done \$1.3 billion in transactions through our auction platform," Herrmann said.

"Our floor auctions are really a hybrid, incorporating online as well," he continued, "but 20 percent of our closings now are through our purely online auctions."

While auctions assuredly have hit their stride, they are best suited for relatively straightforward asset sales rather than properties that have to be quantified and qualified by teams of technical and financial professionals.

Potential buyers in these types of transactions must rely on the data room milieu to access and study relevant information in order to evaluate the offering sufficiently to negotiate a purchase.

Increasingly, this activity is taking place in online data rooms, which are becoming the venue-of-choice for sellers wishing to realize top dollar for their assets. These sophisticated electronic repositories afford potential buyers the opportunity to evaluate properties in greater detail and more efficiently than ever before to determine a price that aptly reflects the value of the assets, according to Jones.

Even though buyers typically need only to register with a site and acquire a unique password to log-on, convincing them to do so initially was no slam-dunk.

"When we started with the online data room concept, there was resistance," Jones said. "People were used to visiting the actual physical room, which was filled with boxes of files and where the walls were covered with maps."

"During the course of usually only a day's visit to this type facility, potential buyers – who often are evaluating many opportunities at once from data housed in different data rooms – have to sift through reams of paper files," Jones said. "They make copies of what they consider to be the most pertinent material and leave with the information they'll use to make their decision."

Compare this to the online data room where buyers have 24/7 access via the Internet to all the data for maybe a month or more, and it's easy to understand why there's been an evolution in users' acceptance since the inaugural sites.

In these online "rooms," individuals can work at their convenience, either alone or together as a team to study the data. There is no need to travel – a considerable savings in both time and money.

Big bucks are involved here.

"We've handled asset packages of more than a billion dollars in value," said Steve Akers, director of business development at IndigoPool.com. "We also set up the data room for the \$750 million sale of North Central Oil to Pogo that closed early last year (see related story, page 18)," he noted.

"If you're making a decision to buy something worth hundreds of millions of dollars and you're under pressure like the traditional one day in a physical data room," Akers said, "it's tough to get enough information to determine the best price to bid."

The logistics alone validate the superiority of the new milieu versus the old.

"A client had a large group of properties that we broke into eight separate packages, each averaging about 10 to 15 data rooms," Akers said. "Doing this the traditional way it would have become almost unmanageable, taking months to set up and requiring maybe a whole building of office space, not to mention the complexity of scheduling and overseeing all the visits."

"Online, it's parallel, meaning all users can come in at the same time," he said. "And it's evergreen, so as changes occur

See **Data Rooms**, page 37

chhoff) & PSDM Grid

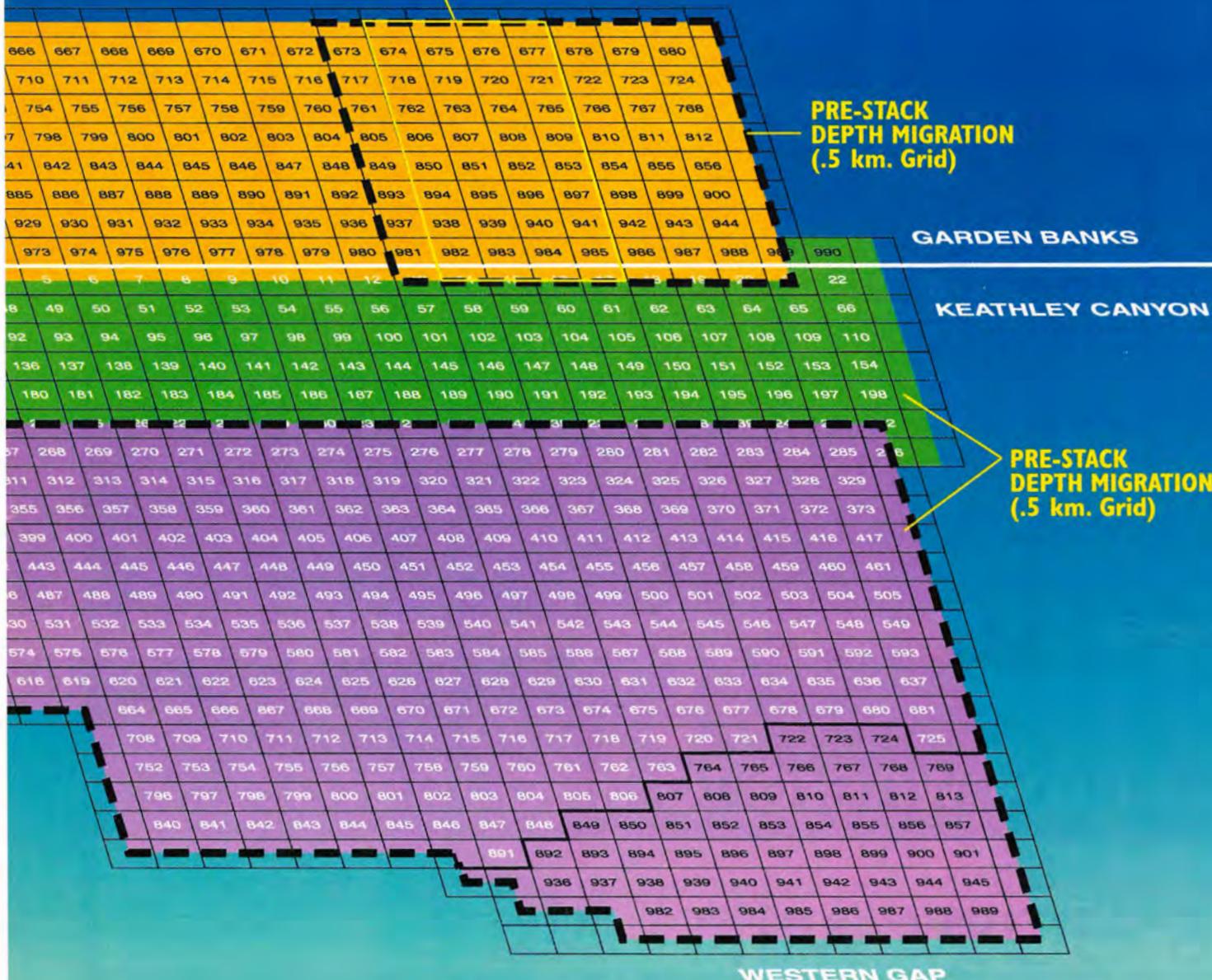


**KIRCHHOFF PRE-STACK
TIME MIGRATION
(.5 km. Grid)**

**FULL VOLUME
PRE-STACK
DEPTH MIGRATION**

**PRE-STACK
DEPTH MIGRATION
(.5 km. Grid)**

**PRE-STACK
DEPTH MIGRATION
(.5 km. Grid)**



705 TOTAL BLOCKS

*A Data Room With No Walls***Online Digits Were Key to Big Sale**

By LOUISE S. DURHAM
EXPLORER Correspondent

Converting folks to a whole new way of doing business in an industry historically reluctant to embrace change is always a challenge, to say the least. Early adopters of new technology, however, often can reap big rewards while blazing the trail for their more-cautious colleagues.

Recognition and acceptance of the exceptional value the Internet can bring to the table is a prime example.

Such was the case when the owners of Houston-based North Central Oil made a strategic decision to sell the company. They enlisted the help of an investment banker, which recommended they bring IndigoPool.com onboard to put together a digital data room to facilitate the endeavor.

This was a major coup for the then-fledgling B2B Net marketplace, which had not yet celebrated its first birthday.

They hit the ground running. "We didn't think they could do it in time, but they did" said Bill Deupree, vice president of Legend Natural Gas and former vice president of North Central Oil. "It only took them three to four weeks to get all the data digitized."

The package was comprised of properties in South Texas, South Louisiana and the Rocky Mountains. A purchase agreement was reached after

"It saved us from making hundreds of copies of every piece of paper we had – and also saved us from being hounded a lot more by people trying to get data."

the data room was open for roughly a month, and the \$750 million sale of the company to Pogo was consummated early last year.

Not surprisingly, an asset offering of this magnitude was an invitation-only affair. And it was a two-step process:

□ Potential bidders first were required to submit a preliminary bid based on information provided in a limited data book, which they were allowed to peruse after signing a confidentiality agreement.

They were given one day in the office to review these data.

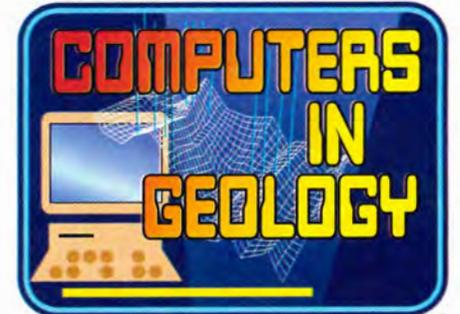
□ Once the prospective bidders were high-graded to the company's satisfaction, the selected participants from the original group were separated into smaller groups and invited into the electronic data room.

This "room" was organized exactly the same as the physical data room, according to Deupree.

"The beauty of IndigoPool and where it added value," he said, "was it gave the prospective bidders access to all that was in the physical data room over the Internet in their own offices. And it saved us from making hundreds of copies of every piece of paper we had – and also saved us from being hounded a lot more by people trying to get data."

Besides the online repository, the data were copied to a CD, which meant the entire data room was also on a disc, allowing even more convenience for potential buyers during the evaluation process.

"The other nice thing with the digital data room, especially the online version, is the ability to supplement and add new information as it's



available is easy and fair, and all get it at the same time," Deupree said.

"The availability and access to the data online definitely enhanced the value we got for the company, in my opinion," he added.

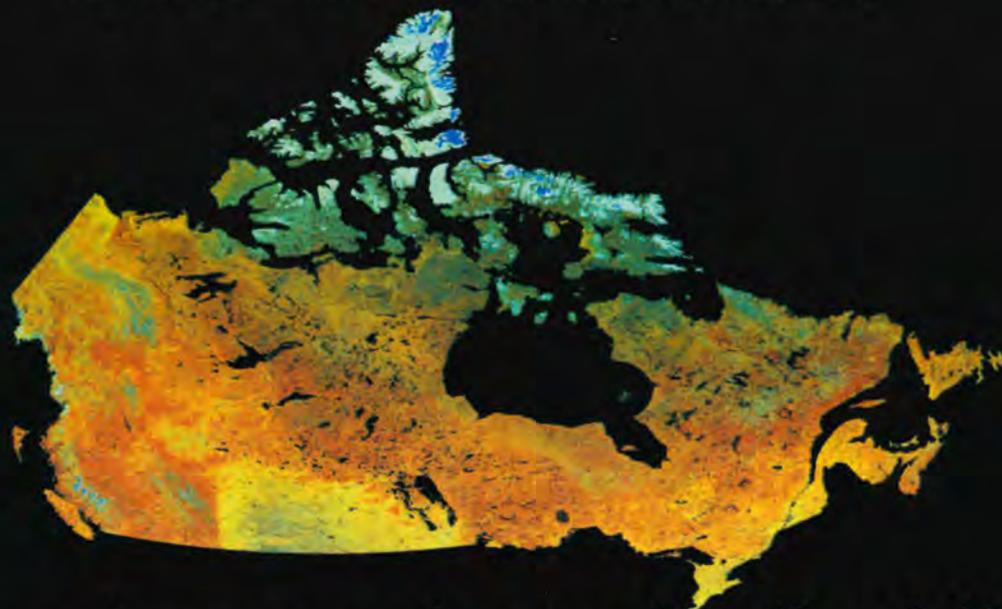
The process dovetailed with his belief in the concept of "more is better" when it comes to data, i.e., provided you have a solid product, then the more data you hand out, the more it should reduce risk and uncertainty, leading to a better price for the asset.

In this case, the proof was in the payoff.

There would be no hesitation over a repeat performance.

"If I were to do it again, I'd either go to IndigoPool or someone like them," Deupree said. "The deals I look at, I like it when they have online data rooms." □

**Canada has over 80 Billion
BOE of Reserves.***



Do you know where to find them?

It's easy with **geoSCOUT™** !

geOLOGIC
systems Ltd.

geOLOGIC systems Ltd., #200, 635 - 6th Avenue S.W., Calgary, Alberta, T2P 0T5
Toll Free: 1-866-847-3837 Fax: 403-262-1987 www.geologic.com

*Statistics derived from data supplied by Canadian Association of Petroleum Producers

EXPLORATION SERVICES

RESERVOIR SERVICES

PRODUCTION

MULTI-CLIENT 3D DATA

WE'RE REVEALING THE HISTORY OF WYOMING. IN DEPTH & IN FOCUS.

It's an historic piece of land with the Pony Express, Overland Trail and the first transcontinental railroad running across Patrick Draw. With 300 times more density than previous surveys, you get seismic detail never before possible. PGS' new coverage of the



Patrick Draw uses our high-density 55' x 55' spacing which images all horizons, from shallow coal bed methane to deep frontier gas. What does this mean for you? More accurate reservoir descriptions - and a chance to make history in the wild west of Wyoming.

When you need high-density data to bring your prospect into focus, count on PGS.



The Pony Express advertised for young, skinny, wiry fellows, not over eighteen years old and preferably orphans.

PGS ONSHORE

For information regarding PGS Onshore multiclient surveys, please contact James Bogardus at 281.679.2209 or Gehrig Schultz at 281.679.2225



OILFIELD TECHNOLOGY SOLUTIONS

www.pgs.com/technologynow

Subsalt Challenges

Seismic Gymnastics Provide View

By KATHY SHIRLEY
EXPLORER Correspondent

Massive salt bodies in the deepwater Gulf of Mexico can be both a blessing and a curse for oil companies exploring the depths.

Yes, large salt-related structures can hold huge accumulations of oil – but the same salt makes finding those big fields a complicated and risky enterprise.

Consequently, the lure of big finds has prompted companies to develop new techniques to reduce risk and improve seismic imaging beneath and around salt bodies.

Pre-stack, depth migrated seismic data is a crucial tool for today's deepwater explorers – and advancements in computing technology and power has made it possible for seismic experts to glean more and more information from data.

This is a story of how advanced depth imaging technology helped one Gulf subsalt operation.

* * *

"Sub-salt reservoirs are the ultimate goal of Gulf of Mexico deepwater exploration," said David Kessler, president of Houston-based Seismic City Corp., "and in the last few years several new, large deepwater fields have been discovered using new developments in imaging technology."

Kessler and his team recently worked with geologists and geophysicists at another Houston firm, EEX Corp., to

continued on next page

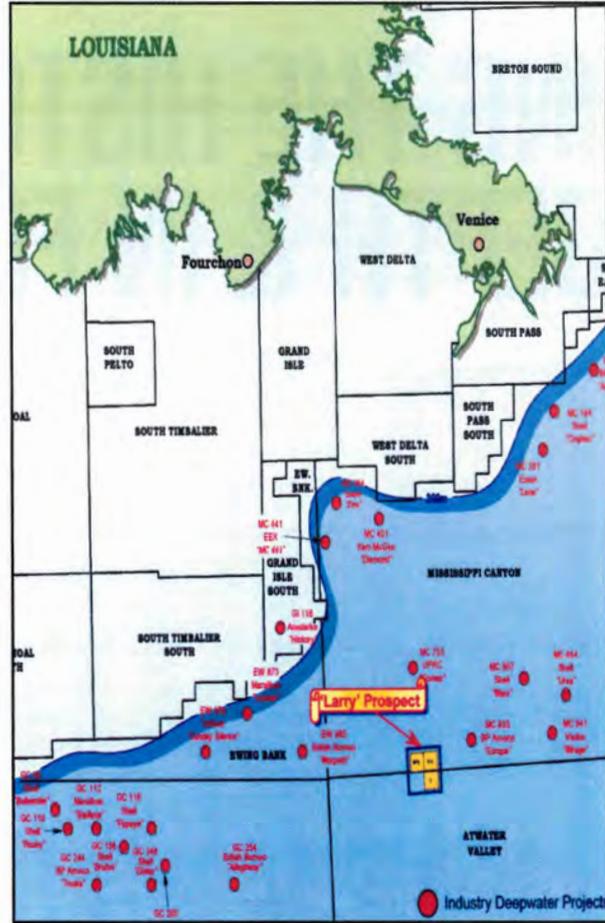


Figure 1 – EEX "Larry" Prospect is located at Mississippi Canyon blocks 975, 976 and Atwater Valley block 8.

Graphics courtesy of Seismic City Corp.

Figure 2 – Depth structure of the Larry 6 horizon resulting from interpretation of the 3-D prestack depth migrated seismic volume.

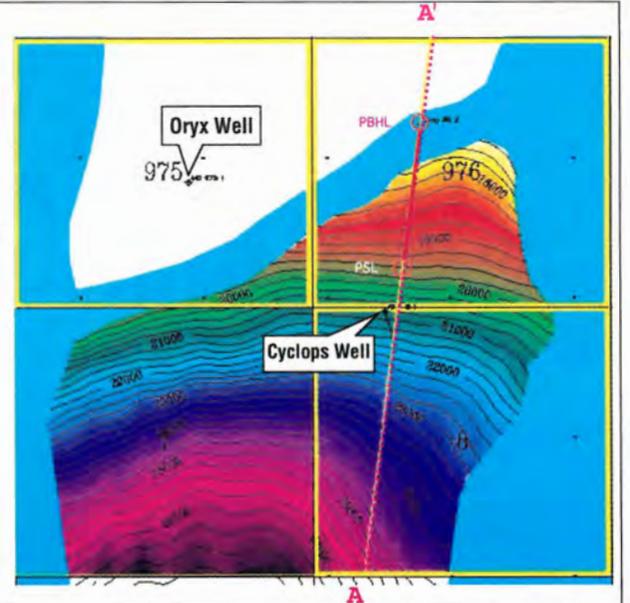


Figure 3 – "Larry" salt body and target layers. The salt body is constructed in steps during the depth imaging process and is a key to successful implementation of 3-D prestack depth migration imaging.



Good data is in the details

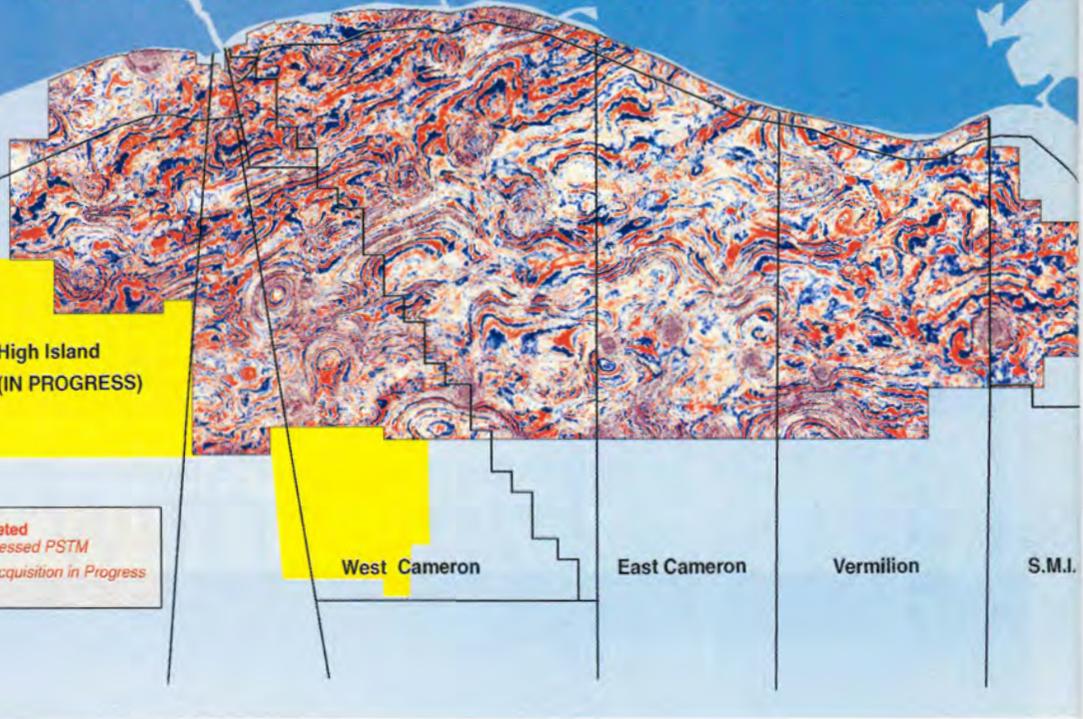
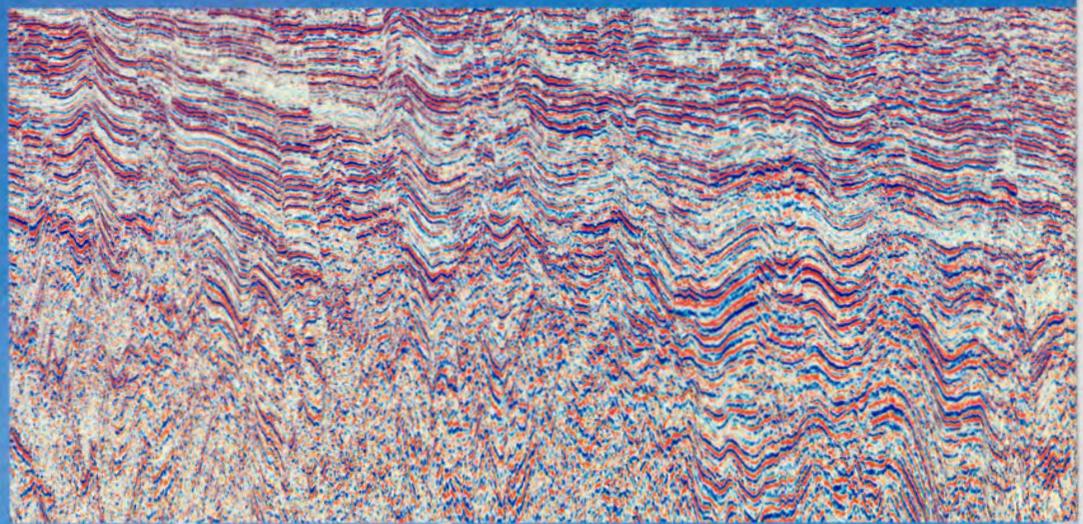
- in-line swath shooting for superior evaluation of amplitudes
- prestack time migration and AVO processing
- long offsets recorded for superior evaluation of the deeper section

existing data

- 7.8 second recording
- offsets limited to 20,000' in processing

new acquisition

- 12 second recording
- offsets limited to 25,000' in processing



continued from previous page

demonstrate how advanced depth imaging technology can enhance the accurate and successful definition of a new exploration prospect.

EEX acquired Mississippi Canyon blocks 975 and 976 and Atwater Valley block 8 in 1999 when Shell relinquished the acreage. The firm believed the blocks had potential based on the Atwater Valley 8 #1 well Shell Offshore drilled in 1997 to 20,700 feet.

Although the Cyclops well was deemed unsuccessful, it encountered several reservoir quality sands in the Lower Pliocene section.

"Based on 3-D data we had, we felt we could get as much as 2,000 feet updip to those sands in Mississippi Canyon block 976 just to the north," said Marshall Thomsen, senior exploration geophysicist with EEX.

The deepwater channel-sands and sheet-sands encountered in the well were deposited in a lower-slope, fan depositional environment. Eighty feet of gas pay was logged at about 14,400 feet, and other sands had significant oil shows.

After acquiring the leases, EEX licensed 1998 vintage pre-stack and post-stack time migrated seismic over the area from Diamond Geophysical. Structural interpretation of this data was EEX's first indication that the same sands at the Cyclops well could be tapped updip at Mississippi Canyon block 976.

According to Thomsen, the prospect is a structural trap below a salt/shale overhang. Massive salt walls form the trap on the east and west flanks, while a rafted shale section – having a remnant salt at its base – creates the trap to the north. Structural dip is to the southwest.

Seismic data quality is quite good for mapping the updip truncation of Pliocene-

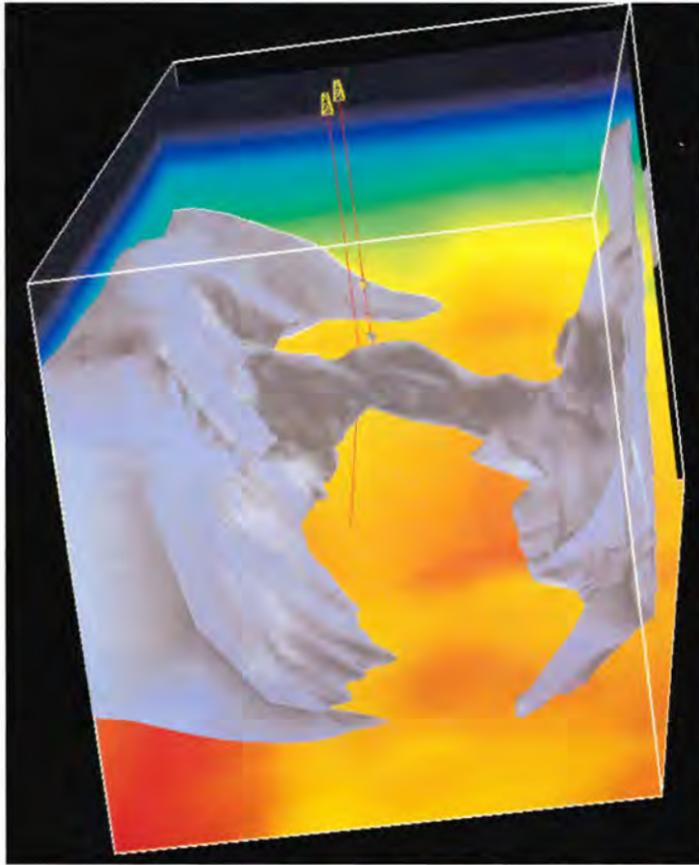


Figure 4 – Three-D velocity model input to 3-D prestack depth migration. An accurate model is necessary for construction of a reliable depth image.

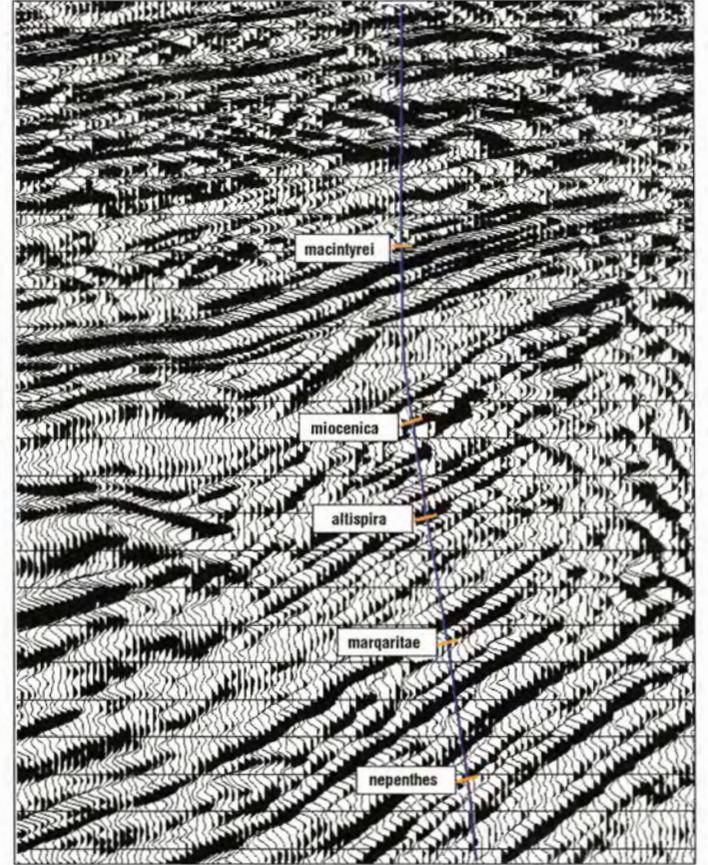


Figure 5 – The depth section resulting from 3-D prestack depth migration closely matches well formation tops in the Cyclops well. This leads to more accurate mapping of the target sand layers. Original time data courtesy of Diamond Geophysical.

age sand found in the Cyclops well against the rafted shale/salt weld, he added.

"The Larry prospect, as we call it, has potential for multiple, stacked pays of Pliocene age with seismic amplitudes increasing updip from the Cyclops well," Thomsen said. "Miocene reflections seen on the seismic also subcrop updip against

the rafted shale section – (and) Miocene age sands produce at Shell's Europa Field nine miles to the northeast."

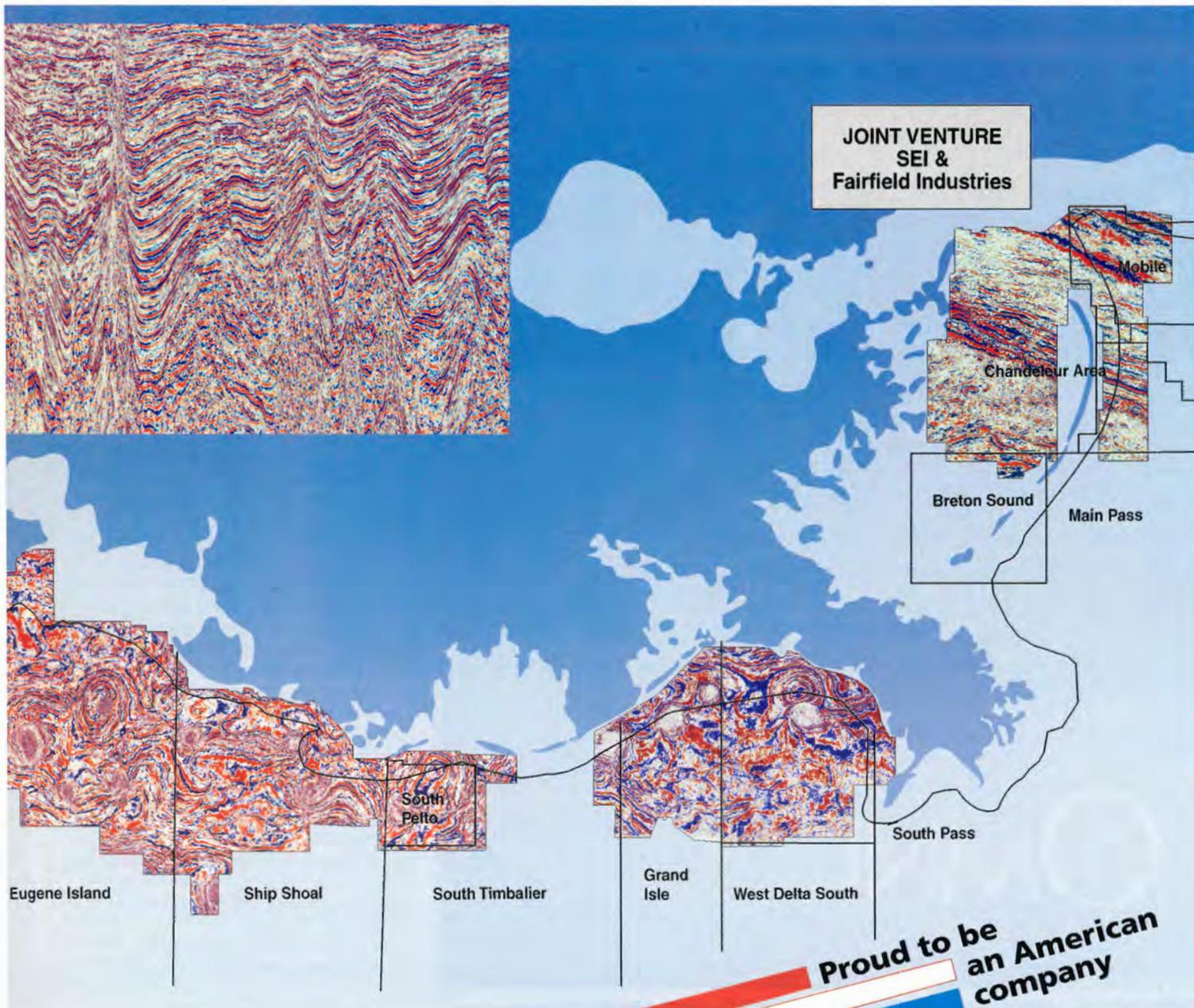
Defining the Parameters

While the time domain seismic data EEX acquired revealed a new prospect opportunity, the data was not imaged

correctly in areas associated with the thick salt on the east and west flanks and the overhanging rafted salt/shale section.

Pre-stack depth migration modeling and imaging, applied to better image the target structure, resulted in a more accurate prospect definition and better

See **Imaging**, next page



Take a detailed look at the deep section.



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

Imaging

from previous page

well planning.

"One of the most important steps of the interpretation process is to define the prospect area by extracting amplitude from the seismic volume," Thomsen said. "In areas of complex geology, the seismic image might contain both primary signal as well as seismic noise. In areas where lithology is rapidly changing, 3-D pre-stack depth migration is needed to correctly image target sands terminating against a salt weld."

To help the technique to properly migrate the seismic data in areas of strong lateral velocity variations, the team used a modeling tool that predicts the wave patterns of the seismic energy recorded during the acquisition phase, explained

Jeff Codd, vice president seismic technology for Seismic City.

A new modeling algorithm – called wave-front reconstruction – simulated complex wave propagation from the surface to the sub-salt target area. Due to the accuracy of the method, the resulting seismic image had very little numerical artifacts.

Three-D pre-stack depth migration was applied in such a way that the relative amplitude of the seismic data was preserved.

"This enabled us to successfully extract seismic amplitude directly from the depth migrated volume," he said, "resulting in a very clear definition of the updip limit of the prospect."

Stretching for an Answer

The reservoir quality sands at the Cyclops well ranged in thickness from 50

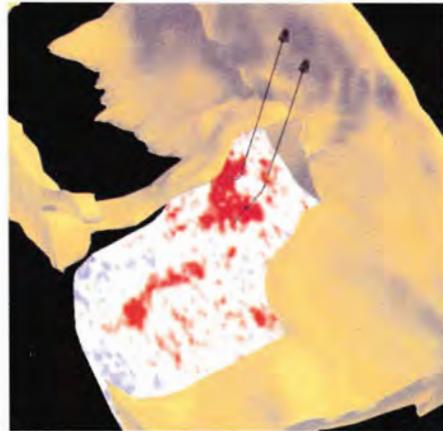


Figure 6 – Seismic amplitude extracted from the 3-D prestack depth migrated volume along one of the target horizons. The down-dip well is the Cyclops well. The up-dip well is the new proposed well.

to 200 feet, and a check-shot corrected synthetic seismogram was generated from the sonic and density logs acquired in the well.

This synthetic correlates with the seismic data and, for mapping purposes, was used to identify reflections associated with the thicker sands – many of which have an increase in amplitude, updip from the Cyclops well, to their termination at the overhanging salt/shale section.

At the Larry prospect, paleo markers identified in the Cyclops well were input to the seismic time data and tied to it using a velocity function derived from a check-shot corrected synthetic. Stretching and squeezing was done to tie the synthetic to the seismic using a log editing software.

A map generated from the seismic volume described the prospective target, but the map had to be converted from time to depth after imaging.

"Depth migration accuracy depends on the velocity field input to the migration process," Kessler said. "This velocity field is a detailed model of the subsurface geology that describes the main geological units – in this case, a complex salt body embedded in a sedimentary section."

Inputting an accurate velocity field to the imaging process will produce a depth section that positions seismic events close to their true depth.

"In cases of velocity anisotropy, the imaging algorithms can use anisotropic parameters to more accurately model seismic wave propagation in the subsurface," Kessler continued, "and therefore, more accurately position seismic events in depth."

The advantage of direct mapping depth seismic volumes, according to Kessler, is that no simplifications of the earth model are done in order to tie the seismic data to known well data. The resulting structure map constructed directly from the depth volume is more accurate than the classic workflow of mapping in time domain and then stretching the map to depth.

The synthetic log was converted to depth and correlated to the pre-stack depth migrated data to determine any depth misties, Kessler said.

This procedure also was used to tie in an Oryx well drilled in Mississippi Canyon block 975, where depth misties ranged from 20 feet at the water bottom to 200 feet at a depth of 20,400 feet.

Is It Salt or Shale?

In many cases of Gulf of Mexico seismic data interpretation, scientists analyze high amplitude markers and determine if they are related to salt or shale, according to Peter Harth, senior geophysicist, and Glen Denyer, depth migration specialist, both with EEX.

At the Larry prospect it was imperative to differentiate between a salt body with a distinctive base and a rafted shale body on top of a salt weld.

"For the purpose of detailed well planning, it was important to determine if the overhanging section is salt or shale since the proposed well is designed to penetrate about 1,500 feet of formation overhang," Denyer said.

A shale raft and any drilling problems associated with it, including basal shear zones, must be isolated in a single hole section, he added, and directional work in the raft and any basal shear zone should be avoided due to potential instability in pre-failed material.

"Determination of the raft, possible basal shear zones underneath the raft and location of remnant salt section are all partial constraints to determine where to set casing," he said.

The salt or shale question was resolved during the depth imaging

continued on next page

It Took Us ~~432~~ 536 Years to Get This Good.

Experience is everything. That's why OMNI Laboratories continues to add to its team of seasoned scientists. Today, the OMNI experts bring over 500 years of expertise to each and every project. Together, we provide the intelligence, experience and knowledge to help you optimize oil and gas production.

At OMNI, we've got the answers.

OMNI
Laboratories, Inc.

8 Locations in the United States and South America • Headquarters: Houston, TX 832-237-4000 • www.omnilabs.com

continued from previous page

process: Two main operations completed during the model-building phase – the construction of the salt body, and the construction of the velocity field around the salt – produced “interval velocities” directly related to lithology, according to the EEX scientists.

This technique – a new velocity analysis based on a depth migration algorithm – gives processors the ability to define velocity variations within geologic formations with a 1 percent margin of error.

At the Larry prospect shale units were differentiated from the salt body by careful analysis of 3-D pre-stack depth migration image gathers. Special effort was made to carefully analyze the velocity above the high amplitude marker, resulting in a very slow velocity field in this area.

“The resulting interpretation of the velocity field, together with the seismic image, concluded that the geology is of a rafted shale section located on top of a salt evacuation weld,” Denyer said, “with a remnant salt of about 1,200 feet thick at its base.”

Mission Accomplished

Four different seismic volumes were used during the interpretation of the Larry prospect: The original 3-D post-stack time migrated data; a 3-D post-stack depth migrated volume; a 3-D pre-stack time migrated volume; the 3-D pre-stack depth migrated data.

The pre-stack depth migrated volume definitely provided superior formation correlation, discontinuity resolution and deep amplitude preservation when compared to the previous processing, according to both Thomsen and Michael Padgett, EEX’s vice president of Gulf of Mexico exploration.

“Again, the issues for the Larry prospect are target placement and hazard avoidance,” Thomsen said. “With the 3-D pre-stack depth migrated data, the location and thickness of the rafted shale section are well constrained, which allows for casing-setting above and below this interval.”

In drilling down from and along the basal salt, he continued, the pre-stack depth migrated image allows well placement to be significantly updip of the Cyclops well, while minimizing the probability of crossing into salt.

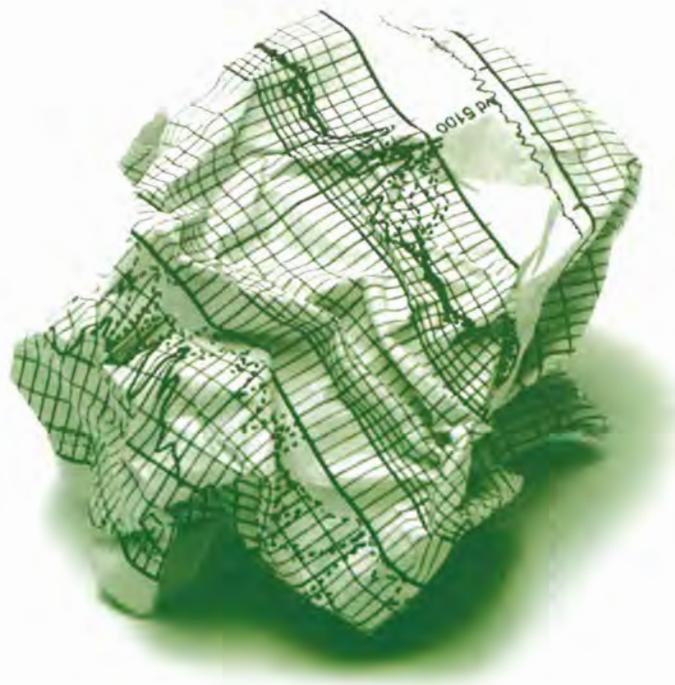
“The vertical error for target placement is expected to be plus or minus 200 feet,” Thomsen said. “Also, as a well is drilled, the pre-stack depth migrated volume can be continuously tied and depth-updated, which decreases the uncertainty during the drilling process.”

As Padgett pointed out, the two primary goals of any seismic project are to unravel the geology and help reduce the drilling risks.

“Today nobody is going to drill around these shale or salt masses without 3-D pre-stack depth migrated seismic,” Padgett said, “especially in the deepwater Gulf of Mexico, where a drilling disaster on a planned \$20 million well ends up costing \$50 to \$80 million. Wells of that magnitude demand the best possible imaging technology.”

Three-D pre-stack depth migration technology was originally developed to image seismic data in areas where time domain imaging failed, according to Denyer and Harth. Today’s depth processing technology can produce seismic depth volumes that bring many advantages to deepwater exploration. “We foresee that further development in depth imaging and modeling technology will improve our ability to interpret seismic images and understand seismic amplitude,” Denyer said, “and will help in lowering the risk of deepwater exploration.”

smartSECTION®
LOG-LINE®
smartRASTER®
LOG-LINE Plus!™
Digitization/Conversion
Client Solution Services
Work Station Ready



Join the Digital Revolution™

A2D Technologies is pioneering the petroleum industry's transition from paper to digital well log data management.

Today, A2D continues to develop a Total Solution that is helping geologists and industry professionals overcome transitional barriers and cross over to the digital world of well log data management and interpretation.

The combination of A2D's data management services creates a total well log solution that is unmatched in the industry. Data acquisition, management, conversion services, productivity-enhancing geologic software, and client solution services work together to provide a high-end, customized workflow for your well log data needs.



The Smart Decision for Well Log Data Solutions

281.319.4944

A2D TECHNOLOGIES

www.a2d.com

*Volunteering for Park Duty***'I Felt Like a Geology Ambassador'**

By **SUSAN EATON**
EXPLORER Correspondent

What would compel a geologist to give up a well-earned university sabbatical or dust off a rock hammer and come out of retirement to spend three months *alone* mapping the geology of some of America's most remote and rugged national parks and national forests?

Add to that, working as a volunteer, bunking in at local ranger stations and leaving friends and families behind?

With financial support from a growing number of non-profit geological associations, a group of highly-skilled and dedicated geologists is winning rave reviews and becoming great role models as volunteers in the Geoscientist-in-the-Park program run by the National Park Service (NPS) and the U.S. Department of Agriculture Forest Service (USDA Forest Service).

A love of geology, a desire to share their knowledge of earth sciences with the general public and a sense of duty to give something back to society have prompted these geologists to volunteer their skills and time.

Equally important, these geologists are making significant contributions to the resource management of the national parks and national forests through the integration of geological processes.

The United States' 387 national parks have a resource management staff comprising about 900 biologists and 68 geologists. Of these 68 geologists, fewer than a third actually work as field geologists or interpreters.

And funding is always an issue, according to Judy Geniac, environmental protection specialist with the NPS' Geologic Resources Division and manager of the Geoscientist-in-the-Park (GIP) program.

"There's simply not enough geologists to go around," Geniac said. "We need all the expertise we can get."

What started out as a "grass roots" effort seven years ago has grown to a program that will see several hundred applicants compete this year for 85 GIP positions in the NPS and 15 positions in the USDA Forest Service. The NPS and the USDA Forest Service provide sponsorship by supplying room and board for the GIPs.

GIP volunteers come from all walks of life – students, high school geology teachers, academics, and working and retired geologists.

"We have just been overwhelmed by the top-notch GIP candidates and by their professionalism," Geniac said, adding that, in some cases, the three-month GIP projects have led to full-time or seasonal positions with the NPS.

Making a Difference

Geoscientists working with and for the country's parks operations is not without precedent.

The Geological Society of America, through its GeoCorps America™ Program, seeks to increase the number of geoscientists working on public lands, enhance the knowledge and management of natural resources, mitigate geological hazards and raise the public's awareness of geological resources on public lands.

GeoCorps America last year expanded its sponsorship to include USDA Forest Service. Managing 192 million acres of land, the USDA Forest Service employs 130 geologists

nationwide.

The project also funded stipends for 20 geologists last year to participate in the NPS-run GIP program, and an additional 15 stipends for geologists in the USDA Forest Service. This year it will fund stipends for 20 of the 85 GIP positions run by the NPS, and another 15 positions in the USDA Forest Service.

"It's our top outreach program," said Julie Sexton, GeoCorps America's program officer. "We don't have any other program that comes close to the numbers and levels of outreach."

According to Sexton, the USDA Forest Service was so impressed by one of the 2001 GeoCorps America participants that they are paying for her college tuition, and have guaranteed her a job upon graduation.

Recently convoked with a B.S. in geology from Ohio State University, AAPG student member Linda Centeno spent last summer as a participant in the Inyo National Forest in the eastern Sierra Mountains of California.

"I wanted to do something fun and exciting," Centeno said. "What I actually

did is learn some geology. I got to use geology in everyday, real life situations."

Her project consisted of preparing an inventory of the more than 300 abandoned mines, then documenting their potential hazards to the environment and to visitors.

While at Inyo, Centeno bunked in the Forest Service barracks with the fire fighters, trail crews and wilderness rangers.

continued on next page



SEITEL SOLUTIONS

www.seitelsolutions.com

Other non-profit geological associations also are recognizing the value of the Geoscientist-in-the-Park program.

✓ In 1999, the National Association for Black Geologists and Geophysicists joined forces with GeoCorps America, contributing money on an annual basis.

✓ During the past two years the Association for Women Geoscientists (AWG) has funded three of its members to participate in the NPS's GIP projects – this year funding stipends of \$2,500 for each of three members who will be competitively selected for a GIP project.

“Our national parks are filled with fabulous geology that’s understudied to this point because the National Park Service doesn’t have the resources,” said Marguerite Toscano, administrator of the AWG-sponsored GIP program.

“The GIP program provides

professional level opportunities for our members to do wonderful things that enhance their lives and careers,” Toscano said.

The AAPG Foundation may become the newest sponsor for geologists working on public lands. The Foundation is currently considering a proposal to fund 10 positions annually through the GeoCorps America program.

Earlier this year, Denver consultant and AAPG member Susan Landon made a presentation to the AAPG Foundation on behalf of the GeoCorps America program.

“I believe in this program,” Landon said. “There’s a tremendous opportunity here for the geoscience community to reach a vast number of people through the National Park Service.

“Geosciences are grossly under-represented in the parks.”

continued from previous page

How does she feel about that?
“My internship at the Inyo National Forest,” she said, “has been the best experience of my life.”

Apparently, she’s not alone:

□ AAPG member **Bob Spoelhof** is a retired geologist who also is making a difference.

According to Spoelhof, his 30-year career in petroleum geology prepared him for his GIP work at Grand Canyon National Park (North and South Rims), eventually leading to a paying position as a Park Ranger (Interpretation).

“I was always a generalist,” Spoelhof said. “I spent a good bit of my time exploring for oil and gas in the Rockies. I came to the parks understanding the

stratigraphy and structural history of the Rocky Mountains.”

Spoelhof will spend this summer in Yellowstone National Park working with Lori, his wife and fellow Park Ranger (Interpretation).

Spoelhof said that many park visitors ask him about drilling for oil and gas in the national parks and national monuments – and he gives them his perspective, based upon his career in the petroleum industry.

“The national parks are rich repositories for not only minerals or oil and gas,” he said, “but for trees and medicinal plants.”

□ AAPG member **Bob Rose**, another retired petroleum geologist and former GIP participant, hopes that more retired geologists will volunteer for the program.

“Retirees have the experience,” said Rose, a 35-year industry veteran who spent two seasons as a GIP interpreter and stratigrapher at Pictured Rocks National Lakeshore, located on the south shore of Lake Superior, Michigan.

Rose’s third GIP season involved mapping the geology at the 40-acre Pipe Spring National Monument and the adjacent Kaibab Paiute Indian Reservation, situated in northwest Arizona.

Rose’s task at Pipe Spring National Monument – an area steeped in American Indian and Mormon pioneer history – was to determine why the water was there. During his project, he worked collaboratively with a hydrologist from the U.S. Geological Survey, and created a geological cross-section through the spring that illustrated the relationship between it and the surrounding geology.

Rose also noted – and corrected – some geological errors in the standing displays at the monument.

“I might have been the first person to have ever given a geological interpretation of that particular 40 acres,” he said.

□ **Annabelle Foos** is a geology professor at the University of Akron in Ohio, specializing in geochemistry and clay mineralogy with applications to environmental geology, petroleum geology, soil science and economic geology. In May she completed her volunteer work as an AWG-sponsored GIP in Zion National Park, where she spent her three month-sabbatical mapping the relic terraces of the Holocene age Hop Valley Lake and collecting sediment samples for paleomagnetic age dating.

Petroglyphs by ancestral Pueblo Indians abound in the park, and many of them are covered by lake deposits of unknown age.

Foos discovered that what the NPS had previously described as ancient lake deposits were in fact alluvial sediments. Further, Foos reclassified the Pueblo drawings from petroglyphs to “picture graphs” (in other words, images painted on and not carved into, the rocks like petroglyphs).

Foos’s excitement is contagious when she describes seeing “Virgin Anasazi” picture graphs some 600 years old.

“I felt like a geology ambassador,” Foos said of her three-month GIP project. “The role of the geologist is to help protect the biological and archaeological resources in the parks.

“We want to demonstrate to the resource managers that geology is an important part of the ecosystem.”

Zion National Park will benefit in numerous ways from her involvement – the data that she collected will be analyzed at the University of Akron, becoming part of the university’s research



FIND DATA*

* without the hassle

**Seitel Solutions
changes
the nature
and the future
of the oil & gas
industry...
forever.**

See **Parks Program**, page 27

*Congressional Panel Hears Mankin***Resource Paper Taken to Task**

By LARRY NATION

AAPG Communications Director

On the same day the U.S. Senate defeated inclusion of exploration of the Alaska National Wildlife Refuge in the long-debated energy policy, AAPG Secretary Charles J. Mankin was testifying at a congressional hearing on resource assessment methodology.

Mankin's invited testimony before the House Subcommittee on Energy and Mineral Resources took to task a recent RAND paper that is proposing "viable resource" as a new category for resource evaluation.

The RAND paper, funded by the William and Flora Hewlett Foundation for the Wilderness Society, said the viable resource "is a fraction of the technically recoverable resource that is also economically feasible for production, sufficiently supported by infrastructure and environmentally acceptable."

Mankin's testimony took issue with the paper's proposal.

"It is AAPG's firm belief that technically recoverable resource is the correct base to use when making policy on competing use of federal lands," he said.

"Viability speaks directly to changes in costs, prices, accessibility and technology," Mankin continued. "After all, at one time none of modern inventions that we take for granted – the telephone, or the computer or the airplane – were 'viable.'"

"More specifically to the oil and gas industry," he said, "drilling and

producing in 10,000 feet of water, or multilateral drilling to access resource from a central point or commercial production of coalbed methane were not considered 'viable' at one time.

"Thus, we believe that viability hinges on market need – and market need drives technological innovation."

Mankin reiterated the point under questioning by Rep. Barbara Cubin, (R-Wyo.), chair of the subcommittee, and C.L. "Butch" Otter (R-Idaho).

David Applegate, government affairs director at the American Geological Institute, said the most extensive questioning at the hearing was aimed at the RAND paper defenders, while the questions to Mankin were of a nature of clarification of the present resource assessment methods.

Interest in resource assessment methods has increased since November 2000, when Congress and the Clinton administration directed an inventory of all onshore federal lands, including estimates of their oil and gas resources and any obstacles to developing them.

Interior Secretary Gale Norton said last year that the Bush administration would consider opening some currently off-limits areas of the Rocky Mountains to oil and gas drilling as part of a broad review of untapped energy resources.

The Interior Department gave the Bureau of Land Management and other agencies until the end of April to gather data on the potential oil and natural gas reserves in the five Rocky Mountain basins, and until November to study the



Mankin

impact of developing them.

The five basins being targeted for study are:

- ☐ The Powder River Basin in Wyoming and Montana.
- ☐ The Green River Basin in Wyoming and Colorado.
- ☐ The Uinta-Piceance Basin in Utah and Colorado.

☐ The San Juan-Paradox Basin in Colorado, New Mexico and Utah.

☐ The Montana Thrust Belt. Cubin called the Rockies "a frontier gas province" that ought to be opened more to entrepreneurs.

"Government must allow dry holes to be drilled by risk-takers searching for the next giant field to replace our declining domestic production," Cubin said.

The AAPG testimony was prepared by Mankin, Naresh Kumar, of the AAPG Committee on Resource Evaluation, and Lee Gerhard, of the Division of Professional Affairs' Government Action Committee.

Mankin also took the opportunity to reiterate other AAPG energy policy recommendations, including access to explore federal lands, stating that the U.S. citizens' "needs are ill-served" by:

✓ Insisting that we have ample sources of energy while putting restrictions on its supply.
✓ That we use more natural gas while shutting areas from where the gas might come.

✓ Insistence that we use alternative energy sources while having no viable alternative source in the near future.

✓ Insistence that oil and gas development by definition spoils the environment are otherwise.

The U.S. House has passed energy policy measures that included ANWR exploration. Mankin was testifying just before the Senate, on the other side of the Capitol, was voting ANWR out of the U.S. energy equation. ☐

THE ROCK PHYSICS BEHIND SEISMIC AMPLITUDE PROF. GARY MAVKO, STANFORD UNIVERSITY

A BASIC UNDERSTANDING OF ROCK PHYSICS IS ESSENTIAL TO THE
INTEGRATION OF SEISMIC AND WELL DATA FOR OIL AND GAS
EXPLORATION AND EXPLOITATION.

THIS 1-DAY COURSE WILL PROVIDE A LARGELY NON-MATHEMATICAL
INTRODUCTION TO THE SCIENCE OF ROCK PHYSICS.

1 DAY COURSE JULY 11, 2002 HOUSTON, TX

REGISTER @ WWW.ROCKSOLIDIMAGES.COM/MAVKO OR CALL 713-783-5593
SPONSORED BY ROCK SOLID IMAGES. SPACE IS LIMITED, REGISTER EARLY.

Parks Program

from page 25

into the terrestrial record of environmental change.

Combining the disciplines of geology and botany, Catherine Crumpton worked as an AWG-sponsored GIP in Big Bend National Park from September to December 2001, studying the distribution of a rare desert cactus. *Echinocereus chisoensis*, commonly known as the Chisos hedgehog cactus, has been listed as a threatened species by the U.S. Fish and Wildlife Service. The cactus is indigenous only to Big Bend National Park. Bordering Mexico on the Rio Grande, the park encompasses 800,000 acres of diverse Chihuahuan desert landscape that includes mountains, desert grasslands, badlands and deep river-cut canyons.

As a geo-ecologist, Crumpton mapped the geologic "parent" materials of the soils, which have a direct correlation on the distribution and abundance of many rare plants in Big Bend. During the project, Crumpton collaborated with soil scientists from the National Resource Conservation Service.

Crumpton honed her mapping skills in using aerial photos and geological maps, and increased her knowledge of soil science and sedimentology. Working independently in the field, she used a hand-held Global Positioning Satellite (GPS) instrument to record key data including geological strata, soil types, bedrock, plant cover and micro-topography. She entered the field data into a GIS (Geographic Information System), integrating it with geologic and soil type maps for the park.

Crumpton developed a habitat suitability model that she used to predict 37 additional sites – based upon key criteria – where populations of the Chisos Hedgehog cactus might be found. The model passed with flying colors in the field.

"I was flabbergasted," Crumpton said. "Using the model, I could actually go out and find new populations of cactus."

Her model now will also be used south of the border in Mexico to map potential habitat for this rare cactus.

Geniac is excited by Crumpton's findings.

"We can use geology as a tool to help manage ecosystem resources, including threatened and endangered species," she said. "The NPS could not believe how much Crumpton had accomplished in just three months."

Joe Sirotnak, botanist with Big Bend National Park, is equally enthusiastic about Crumpton's findings.

"No one had looked at the distribution of this cactus from the substrate point of view," Sirotnak said. "Having the expertise of a trained geoscientist allowed us to look at it from the ground up, literally."

"The Chisos Hedgehog cactus is threatened," Crumpton explained, "because its flower is so beautiful that private collectors and cactus pirates enter the park to steal the plant." Standing 20 to 30 centimeters high, this small, barrel-type cactus doesn't bloom and bear fruit until it is four to six years old.

"All this for a flower that lasts only two days."

A desire to work outside in the desert environment of western Texas led Crumpton to abandon her office job as a bookkeeper eight years ago and pursue a B.S. in environmental sciences. At 49, Crumpton describes herself as a "non-traditional student."

After graduating this spring with a M.S. in geology, she'll return to Big Bend to commence a paid position in a hydrology

project focusing on grassland restoration.

Brittina Argow is an assistant professor at Westchester Community College, New York, where she teaches earth sciences, oceanography and physical geography. In 2000, during her summer teaching break, she worked as an AWG-sponsored GIP with the Cape Cod National Seashore Park, studying the ecology and geology of the Herring River estuary that has been negatively impacted by the construction of a dike in 1908-09 and by subsequent dredging.

Argow waded into an emotionally-charged controversy surrounding the status of the dike – whether to remove it or maintain the status quo. Her teaching and communication skills proved invaluable to the success of the GIP project. Equipped with scientific data on the ecosystem,

See GIP, page 44

Interpretation³

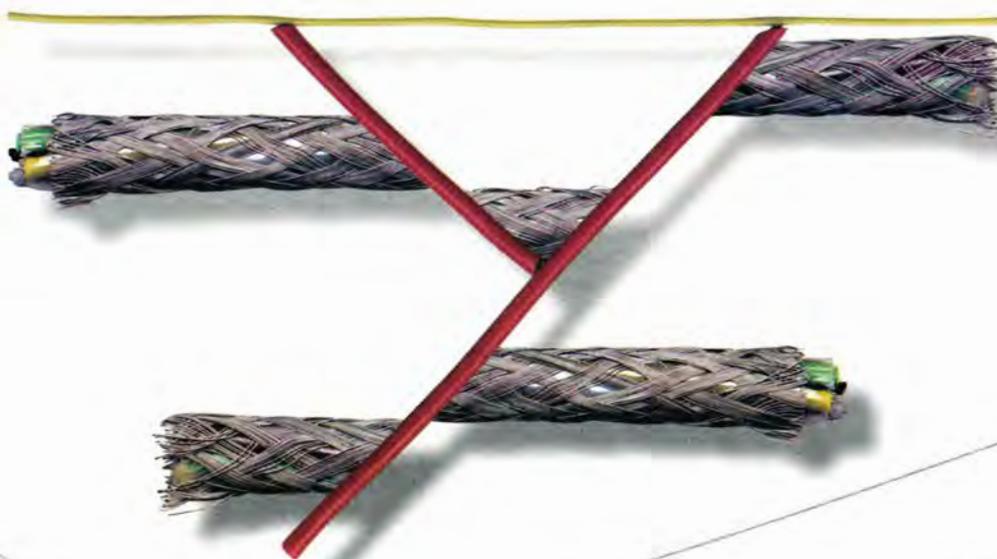
Quality Interpretations for Quality Prospects

Alex MacKeon Dan Shaughnessy

Specializing in 3-D Seismic Interpretations
Integrated Field Studies
Sequence Stratigraphy
Domestic and International
Landmark Workstations

Visit Our Website: <http://www.interp3.com>

11767 Katy Freeway, Suite 300
Houston, Texas USA 77079
Telephone: (281) 293-7770
Fax: (281) 293-0556
E-mail: drs@interp3.com



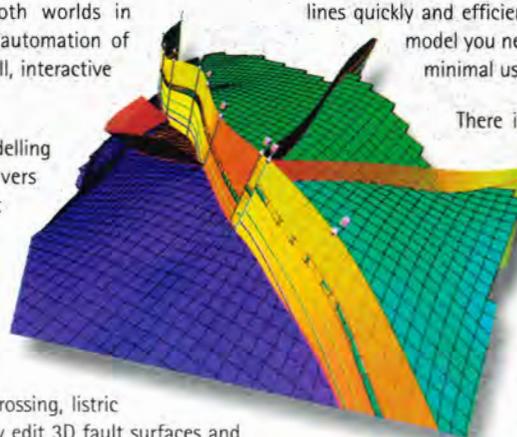
Make faults make sense

Irap RMS offers the best of both worlds in structural modelling – significant automation of the fault modelling process and full, interactive user editing.

The fast and powerful fault modelling functionality in Irap RMS delivers accurate multiple fault models that honour all input data. These models are reproducible and consistent, and can be checked using built-in quality control tools. With Irap RMS, users can model complex structural configurations that include Y, K, crossing, listric and reverse faults, and interactively edit 3D fault surfaces and

lines quickly and efficiently. Irap RMS allows you to build the model you need, the way you want – anything from minimal user interaction to full user control.

There is much more to structural modelling with Irap RMS than fault modelling. This industry-leading package also offers surface and isochore gridding, stratigraphic modelling, and depth conversion of points, lines, surfaces and faults. This flexibility, combined with outstanding geological modelling and flow simulation grids, makes Irap RMS the ideal starting point for your reservoir model.



Roxar Software Solutions – powerful technology and extensive expertise in 3D reservoir modelling
Our solutions make business-critical E&P workflows better, easier and faster

software@roxar.com

www.roxar.com



roxar software solutions

GEOPHYSICAL CORNER

3-D Images Active Gas Changes

The Geophysical Corner is a regular column in the EXPLORER, edited by Denver consultant R. Randy Ray. This month's column is titled "Active Gas Chimneys and Oilfield Karst Associated With a Miocene Reef Complex: Lihua 11-1 Field, South China Sea."

By CHIP STORY

The Lihua 11-1 Field, located 130 miles southeast of Hong Kong under 1,000 feet of water in the Pearl River Mouth Basin (figure 1), was discovered in 1987 and is currently being developed by the consortium of BP, China National Offshore Oil and Kerr-McGee.

The reservoir zone at 3,850 feet subsea is producing 16-22 API degree oil through 25 long-radius horizontal wells.

The Lihua Field is bounded by high water-flow faults and karst features that affect the production of bottom water within the heavy oil reservoir. Three-D seismic data reveal details of the reservoir heterogeneity in spectacular images of gas chimneys associated with both linear and circular karst features.

An ultra high-resolution 3-D seismic survey over Lihua was acquired in July 1997. With peak frequencies over 200Hz, the seismic data have allowed for temporal and spatial resolution on the order of 14 feet. Faults, fractures and karst features in the reservoir were analyzed on this dataset using coherence technology.

Complex attribute analyses added a greater understanding of rock matrix continuity, which was initially thought to provide a tight, competent seal to underlying aquifers.

The focus of this article is on carbonate solution collapse and the associated development of gas chimneys.

Lihua Geology

The Lihua reef carbonates are projected to have in-place reserves of 1.2 billion barrels.

After the initial production in 1996

peaked at 65,000 BOPD but declined rapidly, it became clear that the reservoir lithology was more petrophysically heterogeneous than originally thought, and that a 3-D seismic dataset was needed for a reservoir characterization.

A structure map of the top of the reef (figure 2) shows bounding faults on the north and south sides of the Lihua reservoir. The southern fault system is associated with several circular karst-collapse structures clustered south of the production platform.

Figure 3 is an enlargement of this area from a coherence image showing the internal detail of these features and a modern analog in Belize.

Oilfield Karst and Gas Chimneys

The gas chimneys associated with karst leaching are caused by the CO₂, H₂S and methane byproducts of the bacterial degradation of the oil. The actual karst-collapse results from carbonic acid dissolution associated with the generation of the CO₂.

In the Lihua reservoir the major faults provide channels for significant vertical movement of water at the edges of the reservoir. Several poor quality wells have been drilled into or near these fault zones. At the same time, the ongoing karst solution collapse, which appears to have been active for almost 15 million years, also creates vertical zones for water encroachment both outside of and within the productive area of the reservoir.

Figure 4 is a seismic reflection strength section showing the chaotic reflectivity associated with the vertical deformation and gas chimney over the large collapse feature at the reservoir's southern edge. This feature spans about 5,000 feet of vertical section and is rooted at the base of the carbonate platform in a sandstone aquifer that crops out on the seafloor.

Geochemical and mechanical effects caused by dissolution microfracturing

continued on next page

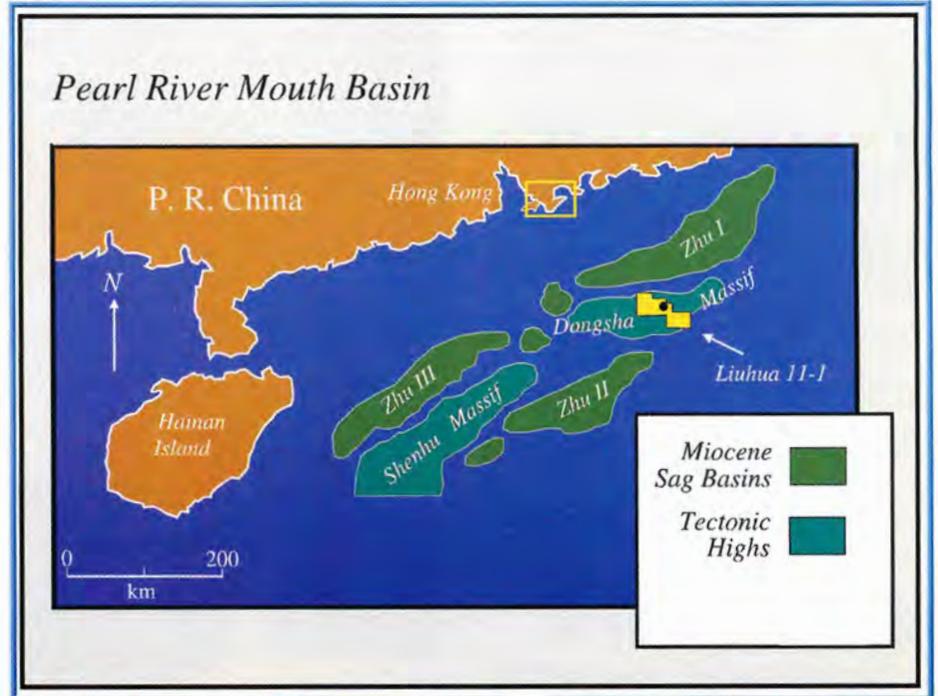


Figure 1 – Location map of Lihua 11-1 Field, South China Sea.

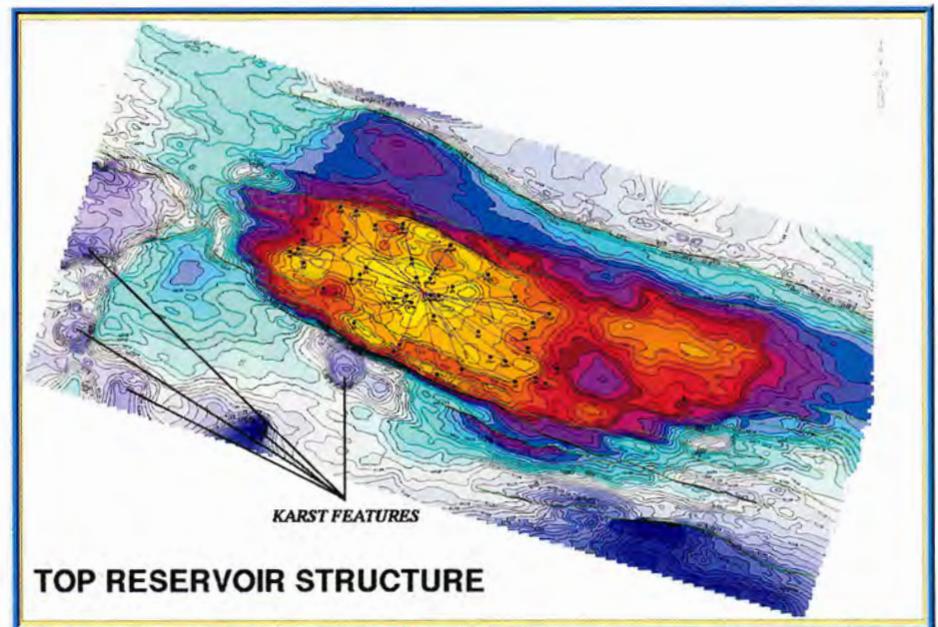


Figure 2 – Depth structure map showing central platform and directional wellbores. The map area is 14 X 7 kilometers. Major karst-collapse features shown.



Figure 3 – A close-up coherence image of the karst sinkholes on the field's southern margin. A modern karst analog is the Great Blue Hole, offshore Belize, shown in an oblique aerial view and in a close-up.

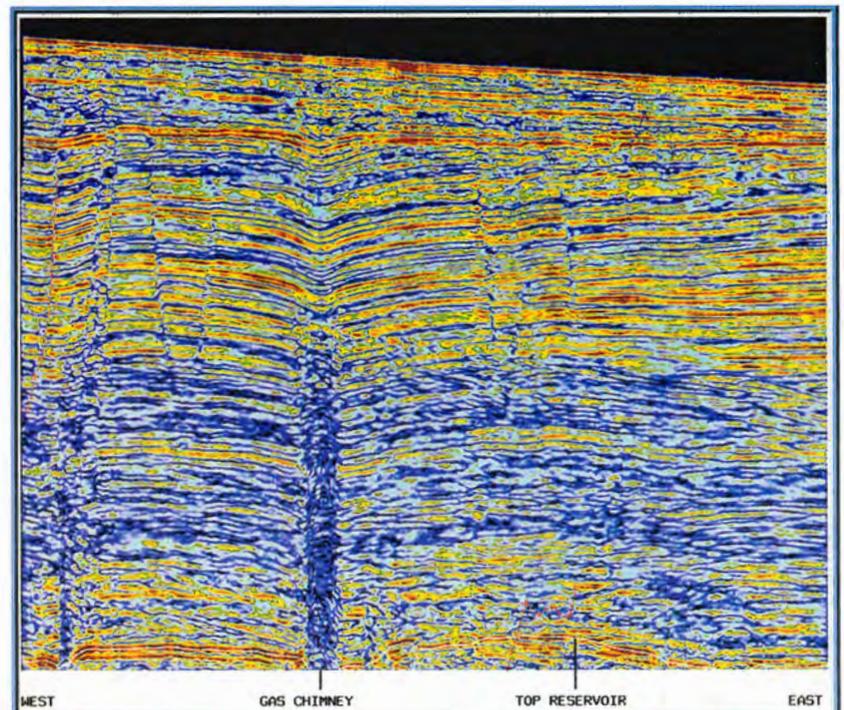


Figure 4 – Reflection strength seismic section over chimney at south edge of reservoir. Structural deformation is highly constrained in a cylindrical pipe. Shale section above reservoir must be microfractured to allow for upward gas/water movement and dim-out within the chimney.

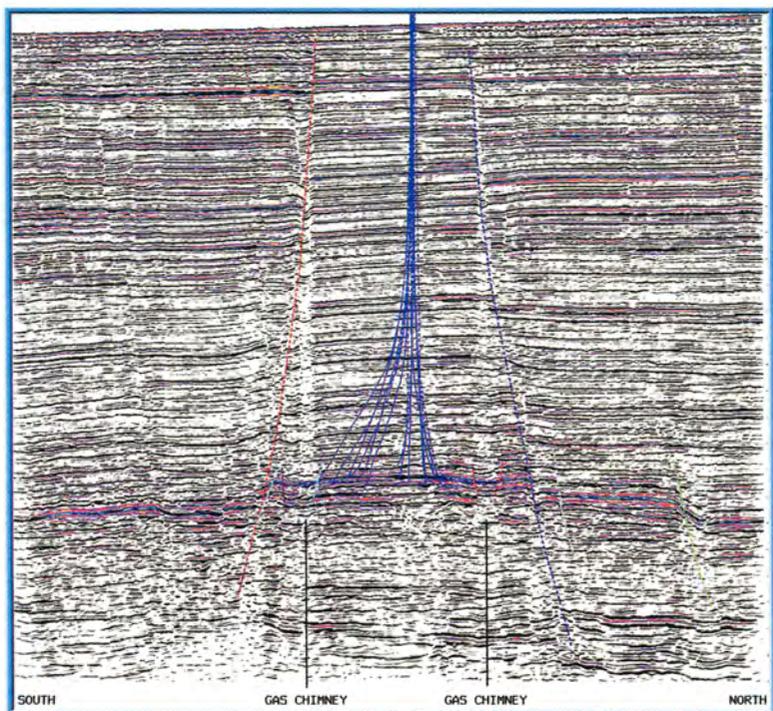
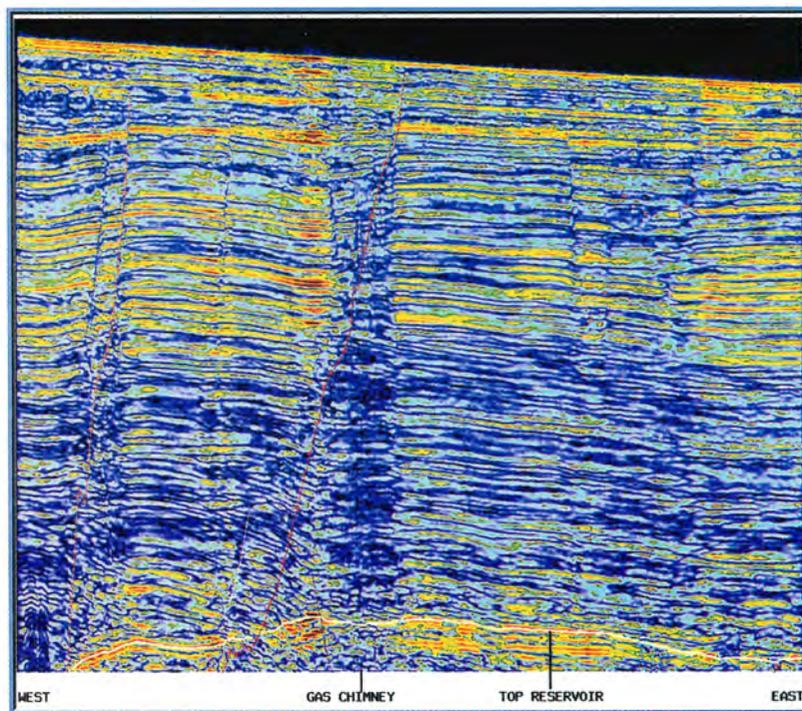


Figure 5 (left)— A north-south seismic section illustrating the fault-bounded reef platform and associated gas chimneys rising from the oil reservoir.

Figure 6 (right)— An east-west seismic section within the southern chimney zone of figure 5. Note the amplitude loss in the reservoir carbonates near the base of the chimney and the brightening of some of the more porous shallow units adjacent to the chimney and downthrown to the fault.



continued from previous page

and stratigraphic brecciation of the brittle carbonate matrix ultimately create pathways for the upward movement of water into the horizontal well bores. Tight rock appears to become more permeable, while porous reservoir rock becomes less porous and permeable as a result of these combined processes.

Because of the preferential permeability of water relative to oil in a heavy oil reservoir, the tighter rock now produces water almost to the exclusion of oil.

Figure 5 is a north-south section showing the vertical dim amplitude zones, gas sag and collapse adjacent to

the bounding faults. Both groups of bounding faults are adjacent to partially collapsed gas time-sag zones within the reservoir. This subtle low velocity sag (about four meters) is linear rather than circular, and is thought to represent incipient carbonate dissolution.

Figure 6 is an east-west reflection strength section within the chimney zone, parallel to the south edge of the reservoir in figure 5. Again, the amplitude anomaly that extends to the sea floor in the chimney collapse zones within and above the reservoir is due to gas, suspected microfracturing and some carbonate porosity changes.

This same zone is connected to the large off-structure sinkhole complex shown in figures 2 and 3, and was

modeled as a major source of water influx responsible for poor production in the western field area.

Conclusions

Much of the prior geoscience understanding of the Lihua reservoir was revised as a result of this work, including:

- ✓ Oilfield karst is now thought to be a significant factor affecting the hydraulics of the Lihua reservoir.
- ✓ The relationship of the karst features and gas chimneys with an abnormally large upward movement of water explains the high water cuts in many of the wells.

The field fluid movement was modeled successfully in a reservoir

simulation guided by seismic attribute analyses of the fault, fracture, gas chimney and partial dissolution zones.

The resulting production history matching of the fluid flow around the horizontal well bores confirmed the reservoir's complex character.

(Editor's note: Chip Story, a geophysicist with and co-founder of Vision Resources in Houston, presented this information in a paper at the recent AAPG annual meeting in Houston. His co-authors were Christoph Heubeck, with the Free University of Berlin, Germany; Patrick Peng and Claire Sullivan, both with BP; and Jian Dong Lin, with the China National Offshore Oil Corp.)

EXPLORATION SERVICES

RESERVOIR SERVICES

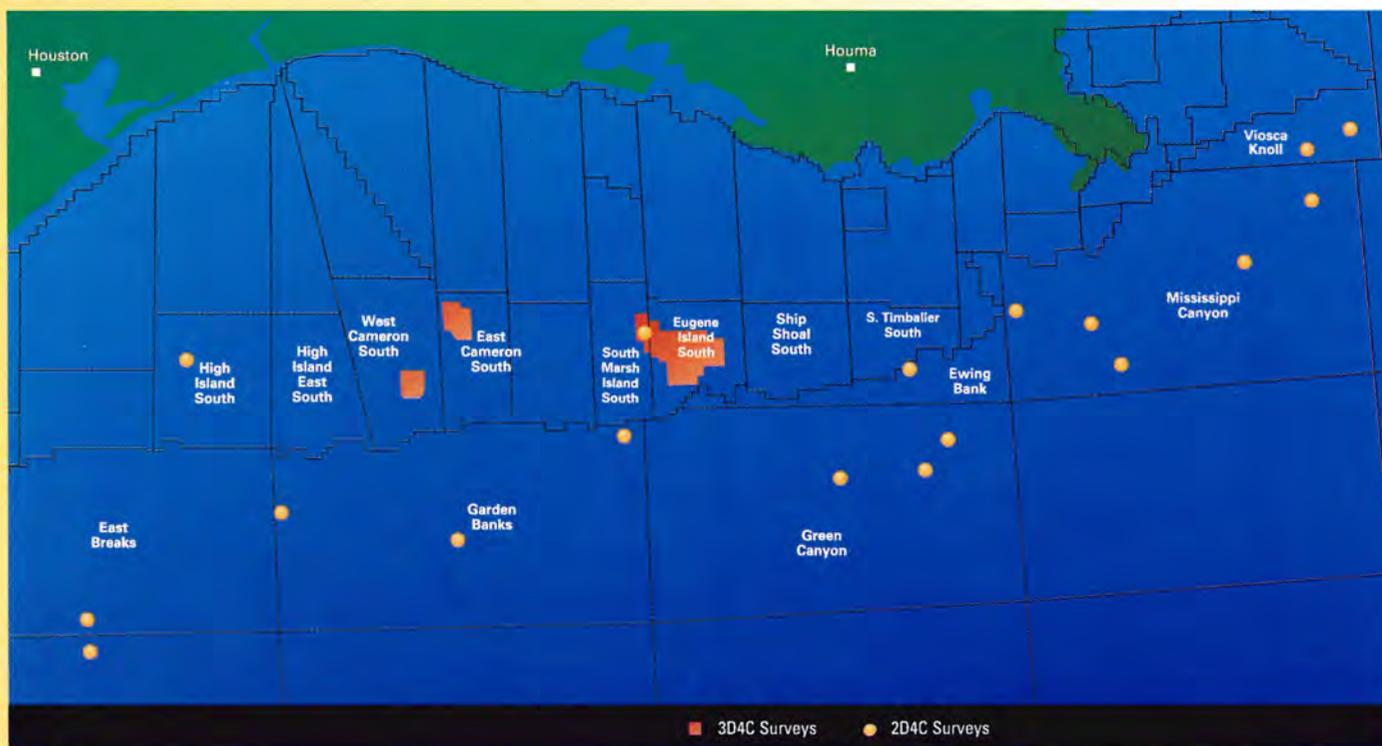
PRODUCTION

MULTI-CLIENT 3D DATA

High Density. Better Value. Less Risk. Let four-component Multi-Client surveys from PGS increase your chance of success in the Gulf of Mexico.

Now available in EUGENE ISLAND SOUTH, our 3D4C survey features the highest-density multi-component data in the Gulf of Mexico.

- Orthogonal patch survey design provides higher nominal fold, wide-azimuth illumination and long offset coverage out to 8000 meters.
- PGS' high quality 3D4C surveys are also available in East and West Cameron South.
- For more information, contact PGS/Diamond Geophysical now.



PGS GEOPHYSICAL – SEAFLOOR SEISMIC

738 Highway 6 South, Suite 300
Houston, TX 77079
Tel: 281-589-6725



OILFIELD TECHNOLOGY SOLUTIONS

visit our website @ www.pgs.com

BUSINESS SIDE OF GEOLOGY

Real Problem – Or an Abstraction?

By PETER R. ROSE

Because exploration ventures historically have been associated with high risk and great uncertainty, they have been perceived as speculative by many prudent investors – thus the natural arena for two general types of private investors: ill-informed victims and well-informed survivors. *Caveat emptor* is the watchword.

That's why portfolio management is so important, and so widely utilized by successful E&P companies – it allows such risks to be diversified.

And E&P risk analysis, on which it

Always remember that the E&P business is an amazingly small community – and the word really does get around. Folks have long memories.

depends, requires prospectors to be objective and professional.

It is no accident that petroleum

exploration has been the natural habitat of visionaries, seers, promoters and not a few outright frauds – as well as a far

larger number of commendably honest and honorable geoscientists, engineers and landmen. With so much money riding on the outcome of so many high-risk, high-potential ventures, such intense competition among various players, and such wide usage of geotechnical tools (and their consequential output), it is only natural that secrecy and proprietary data are endemic to the E&P business.

Some of the most common ethical lapses among explorationists involve confidentiality and respect for proprietary tools and information. Many geoscientists seem to have conflicting ideas about data:

✓ The scientist in them prefers to view all information as public property – but with an inalienable right to personally “rat-hole” it!

✓ The businessperson jealously guards it as private property.

However, the law on proprietary information and intellectual property comes down mostly on the side of whoever paid for it. So it's disappointing – but not surprising – that many proprietary seismic lines and maps have strayed away from their proper stewards.

And how many geoprofessionals have unlicensed copies of proprietary software on their computers?

How many corporations communicate clear codes of conduct to their professional employees about proprietary data and tools, and periodically check on their compliance?

* * *

The flip side of the confidentiality coin is communication – objective, transparent and timely communication to our managers, directors and investors.

It's easy to relay good news. Conveying bad news is a lot tougher, requiring disciplined professionalism and often the willingness to be accountable. As we all know, “Success has many fathers; failure is an orphan.”

Bottom line: Always tell the truth (you'll never have to remember what you said), and tell it timely.

* * *

A serious breach of ethics may not result in a complaint being filed with AAPG's Ethics Committee. Historically, it is even more unlikely that AAPG will take any official adverse action (though I hope that will change soon). But such a breach will likely cost you a colleague's respect, a client's confidence or a competitor's condemnation.

Based on my 43 years of experience, several such breaches are likely to make you, unknowingly, a pariah among your peers. Always remember that the E&P business is an amazingly small community – and the word really does get around. Folks have long memories.

Never forget that real people get hurt because of ethical violations – professionals, investors, families and friends. People are cheated out of their property. Their good-faith investments are wasted. Their hard work is denigrated. Their faith is destroyed. On the other hand, careers can be capsized, and families can be shipwrecked.

continued on next page

The Oklahoma Land Rush Is On Again!

Do the Cumberland/Aylesworth trends continue to the Southeast past Lake Texoma? Find out with JEBCO's new Bryan County 3D seismic survey, the newest data in Oklahoma.

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 turn-around. Call on JEBCO for non-exclusive surveys worldwide, and let us help you stake your claim in the next Oklahoma Land Rush!



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

Plans Begin for Bigger, Better APPEX 2002

Riding high on the success of last year's initial experience, the creators of APPEX 2002 are expecting this year's event to be not only twice as big but twice as successful as well.

This year's annual AAPG Prospect and Property Expo will be held Aug. 27-29 at the George R. Brown Convention Center in Houston, using as its theme "APPEX: The Right Time, The Right Place, The Right People."

AAPG, SIPES and the Houston Geological Society are the sponsors for an event designed to be both geoscientist and prospector friendly – it's a chance to display ideas, plays and properties to a large crowd at the time of year when most buyers are developing their budgets for

the coming season.

Last year's inaugural APPEX earned rave reviews from buyers and sellers alike; several prospectors reportedly sold up to five deals during the event, and early sign-ups have indicated a good chance of filling this year's 400-booth floor-plan.

And as was the case last year, APPEX will feature a "Dealmakers' Conference," which will begin at 8:30 a.m. on Tuesday, Aug. 27, offering a variety of talks and sessions to help both independents and majors. The program will include sessions on:

- ✓ Capital Sourcing.
- ✓ Acquisitions.
- ✓ Divestitures.

- ✓ New Exploration/Production Strategies.

Several major acquisitions and mergers will be featured that day, including a special session on the merger of Pan Canadian and Alberta Energy, which created EnCana, the largest independent in the Western Hemisphere.

Special emphasis will be EnCana's eastern Canada and offshore activity, with additional information concerning their large North Sea discovery.

The Expo itself will kickoff with the Tuesday night Icebreaker, with access to the APPEX booths at that time.

A mini-breaker is planned after Wednesday's full day of prospecting, followed by "International Night," featuring

talks on the redevelopment of several abandoned fields on the UK North Sea Shelf via horizontal drilling and modern 3-D and 4-D seismic definition. Speakers will include Iain Murray, the British Consul in Houston, and Gene Van Dyke, Vanco Energy, who will recount Vanco's success as an independent in the North Sea and offshore West Africa.

APPEX continues on Thursday, Aug. 29.

More than 1,500 people participated in last year's APPEX, and general chairman Charles "Chuck" Noll is hoping – and planning – for twice that number this year.

For more information, see the insert on page 32 of this month's EXPLORER; or go to the AAPG Web site at www.aapg.org.

continued from previous page

Ethics is not some ivory-tower abstraction.

* * *

With all this uncertainty, thirst for data and complex conditionality of deals, how does the well-intentioned explorationist keep to the straight and narrow and still remain competitive?

Most important, always conduct yourself as a professional!

Over the course of a career, it behooves you to frequently "take stock" regarding your interactions with colleagues, clients and competitors. And constantly think about what you are doing in your business dealings. Also, it's not a bad idea to have a framed copy of AAPG's Code of Ethics on the wall of your office, in plain view of your clients as well as yourself.

But it also would be good if AAPG, through its Division of Professional Affairs, would be much more aggressive about pursuing ethical violations.

Because ethical lapses come in varying degrees of severity, I think we should handle many ethical problems internally, through mediation, mentoring and warnings. Beyond that, sanction and expulsion should be more frequent, even if it does risk counter-litigation.

Finally, members might expect our professional associations to maintain a higher profile regarding ethical events:

✓ Did AAPG, or AIPG or SIPES speak up promptly and prominently to condemn the Brea-X mining fraud a few years ago?

✓ Our silence regarding the recent Enron scandal has been deafening.

Why haven't our professional associations spoken out through timely press releases to the media and articles in our own journals? Isn't that part of their proper purview? Or is the AAPG just a trade association?

* * *

This month's reading recommendation: *Systems of Survival*, by Jane Jacobs (1992 Vintage Books), a remarkably insightful little book about differing ethical systems and standards.

Read it – you'll like it!

(Editor's note: Peter R. Rose is managing partner of Rose & Associates, Austin, Texas.)

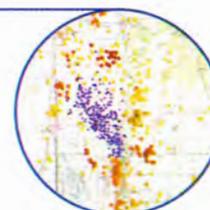


At GeoGraphix, our focus is helping you meet your Exploration and Development challenges every step of the way – let our Windows®-based solutions help you accurately navigate from reconnaissance to reservoir. No matter how simple or complex your workflow, GeoGraphix can enhance your interpretation projects with practical solutions to meet your E&D requirements.



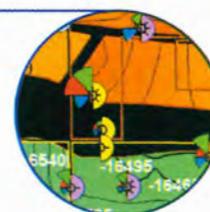
Integrated Workflows

GeoGraphix solutions are designed to work the way you do! Whether you need a quick basemap for an investor meeting, or sophisticated cross sections for building accurate geologic models, our solutions include proven state-of-the-art applications wrapped in a Windows-friendly environment.



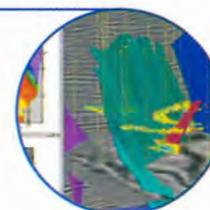
Accessible Technology

With a host of new wizards, templates and mouse-driven assistants, GeoGraphix technology can be learned and utilized faster than ever before. Our continual emphasis on performance enhancements will allow you to leverage the power of your IT infrastructure and investments as they exist today and in the future!



Great Value

No other Windows solution can take you completely from reconnaissance to reservoir. Our domain expertise in mapping, modeling and G&G interpretation is simply unmatched in breadth and integration. In addition, new GeoGraphix reservoir modeling capabilities give you a full set of solutions that maximize your investment.



GeoGraphix

RECONNAISSANCE TO RESERVOIR

Visit us today at www.geographix.com to request an evaluation of our software!

SIMPLY GEOGRAPHIX

© 2002 Landmark Graphics Corporation. All rights reserved.

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

Foundation General
Charles Woodrow Achauer
In memory of Charles Moke
Craig William Adams
Roy D. Adams
Abdulkader M. Alifi
Victor F. Agbe-Davies
Kouki Akihiko
Adebayo Oladete Akinpelu
Toru Akutsu
Khalifa M. Al-Hinai
In memory of Ziad Beydoun
Thomas Ikenna Alaribe
John A. Albers
Charles William Alcock
Roger Gordon
Alexander Jr.
In memory of H.D. Klemme
Timothy Michael Hope
Allan
Edith C. Allison
Eric Thomas Allison
Charles Colt Almy Jr.
Joel R. Aines
Eugene Leroy Ames Jr.
Alan David Ammentorp
John J. Amoruso
Michael Anthony Andersen
Henry Sherman Anderson
Michael Kent Anderson
Clifford Joseph Ando
Terje Andresen
Sanford Glen Andrew
Thomas Westley Angerman
Kehinde Steve Anthony
Robert Holt Andrey
Walter Eusebio Arias
M.E. (Mo) Arnold
Marco A. Arraguin-Lopez
Franklin Assoko-Mve
Leonard McCaskie
Atkins Jr.
Armando Enrique Avella
Patrice Baby
Heinz Bachmann
Jonas W. Bailey
B. Boniface Bait
Chester Earl Baker Jr.
In memory of Donald B. Eicher
Roger G. Baker
Ewart Merlin Baldwin
Thomas Ashley Baldwin
David Wayne Ballard
William Wayne Ballard
Albert Walter Bally
Frank J. Banar
Edward A. Banaszek Jr.
Laura Ann Banfield
Jacqueline Ann Banner
Thomas David Barber
Clifford Abbott Barkell
Jeffrey Ross Barkley
Robert S. Barnard
Duncan Charles Barr
Joseph David Barrett
William Lassiter Basham
Yannis Bassias
Raymond Holmes Bate
Douglas Patrick Battin
Andreas Anton Bayer
Barbara Gail Bayne
Joseph Bazyk
Lewis C. Beach
Ted Lee Bear
Brian Douglas Bearinger
Tamara Lester Beauvoeu
William Cory Beck
David Beckett
Edward W. Beedle Jr.
Kenneth Earl Beeney
James Andrew Beer
Andrew Bell
Mark Lee Bellows
Andrei Belopolsky
In memory of Mingchou Lee
W. Owen Bement
Alfred Edward Benice
Daniel Joseph Bendig
Richard Walter Benner
Orville Roger Berg
Robert Raymond Berg
Zeev Berger
Bruce E. Bernard
Larry Gene Berry
Henry Lee Berryhill Jr.
Mark Preston Belts
Robert Dean Beu
In honor of James E. Hooks
Kenneth Joseph Bichsel
Perry W. Bilyeu
In memory of James Desanto
Thomas John Birmingham
Andrew Nicholas Bishop
William Glenn Bixler III
Brian James Black
Robert William Blair
David C. Blanchard
Francis Xavier Bland
In memory of Harold N. Hickey
Robert Lawrence Blanton
Peter E. Blau
J. Edward Blott
Charles H. Blumentritt
Jeremy Monroe Boak
Katherine Elizabeth Bobb
George Robert Bole
Edward John Bolin
Robert M. Baling
Rena Mae Bonem
Friedrich Bonvie
Max Louis Bordenave
Erhard Bornemann
Louis Chapman Bortz
In honor of James Algert Peterson
Brian Keith Bostlaugh
Pierre M. Bot
Robert Jan Bottinga
Shon Bourgeois
Renaud Bouroulec
Richard James Bowe
William Howard Bowie
Benjamin Kyle Bowlin
Yevgeniy K. Boyarshtin
Donald Wilkin Boyd
Richard George Bozanich
Julius Royston Bozman
BP Amoco/Matching Gift Center
Matching gifts from
John M. Sweet, Ben D. Hare, Marcus Miling, William Scheidecker

Steven H. Brachman
In memory of Malcolm L. Robinson
Kenneth Bradley
William A. Bragonier
Donald J. Brammer
Laurie Ann Brazzoni
Philip Francis Brennan
Joseph Lawrence Brewton
Donald A. Brice
Janet Brister
Marvin D. Brittenham
Austin Day Bruxy Jr.
D. Robert Brogdon
In memory of E.D. Sneed
David W. Broughton
Alex S. Brown
Ian Thomas Brown
Sally Sue Brown
Owen Louis Broyles
Gerald Craig Bryant
Peter Buckley
John William Buffington
Govert J.A. Buijs
Lucy Shirah Bultmann
Brian Dean Burgess
Mitchell Keith Burk
Steven Lewis Burleson
William Melville Burnett
James C. Burns
Robert Alonzo Burris
Jason W. Bybee
Leon Gaddis Byler Jr.
D. Gregory Cable
Nancy Bernard Caffero
Susanna Sofia Calvo
Angus S. Campbell
Neil David James
Campbell
In memory of Hugh C. Mason
Edward B. Campen
Elizabeth Bartow Campen
Joaoquin Paul Cardoso
Christopher Frank Elders
Jason Wade Eleson
Mark H. Elliott
Trevor Elliott
Kenneth Walter Carlson
Neils R. Carlson
William Douglas Carlson
Mario Carminatti
Timothy Robert Carr
Hubert Francis Carson
James E. Carter
Jack Cleveland Cartwright
Francisco F. Carvalho
Eric James Casazza
Robert Lee Cash
John Kelly Cassell
Martin Macdermott Cassidy
In support/AAPG publications pipeline
Gary Paul Casteel
David Andrew Castillo
Paul Anthony Caccosinos
In memory of Charles F. Dodge III
Michael Daniel Caulfield
In memory of Terry Bicknell
Clarence Peter Cazalot Jr.
Thomas Leland Chamberlin
John Judson Chapman
In memory of William Wallis
Robert Mills Chapman
Kenneth John Chew
Don J. Christensen
Carlo Charles Christina
Stewart Chuber
In memory of William R. Stanton
John C. Fitzmaurice
In memory of Sean Fitzmaurice
Gregory Brian Flynn
William Jack Ford
John L. Forman
Michael C. Forrest
Helen Laura Foster
Thomas Dee Fouch
Matthew J. Frankforter
Stephen K. Frazier
Kenneth R. Frech
Kenji Hirabayashi
Roger Alan Freidline
Michael C. Friederich
Eric Wells Frodesen
Mark William Frye
Takashi Fukuda
Lawrence W. Funkhouser
Gilbert Gaines
Mark Joseph Gallagher
Sidney Stewart Galpin
Gary L. Galyardt
Arthur John Garden
John Michael Garihan
Richard Anthony Garrard
Larry R. Gaston
Keith Dennis Gerdes
Ashton Blanchard Geren Jr.
Kenneth Work Germond
James A. Gibbs
In memory of Joseph R. Huffstetter
Richard G. Gibson
William Carleton Gibson
Gerald Macon Gilbert
John Edward Gilcrease
Ernest Carlyle Gimblet
William E. Gipson
Howard Bruce Glassman
Gina B. Godfrey
Renee Clary Godley
Cory John Godwin
Dieter Martin Goehner
Stephen M. Golas
Jerry Bruce Golden
Beatriz Victoria Gomez
Ian Robert Gordon
Donn Sherrin Gorsline
Charles Arnold Gorveatt
Bob Gose
Robert McCary Grace
James Victor Grant
Kim P. Granow
Peter Gordon Gray
In honor of Donald A. O'Nesky
Wayland Eugene Gray
A.T. Green Jr.
In memory of H. Grady Collier
Howard Russell Green
Laurence Andrew Green
William Randolph Green
William Jeffries Greer
C. Claire Gregg
In memory of T. Keith

David D. Dernick
Peter Ulrich Diebold
Peter Diebold
Indraman Halim Dihadjda
Robert Floyd Dill
Edward G. Dobrick
Evelyn M. Turpin Dookery
In memory of W. Lyle Dookery
Timothy Alan Dodd
Donald D. Dodge Jr.
Warren J. Doenz
Charles A. Doh
David J. Doherty
George Dolezal Jr.
Kenneth Thomas Dorbandt
Donald W. Dom-Lopez
Robert Henry Dott Jr.
In memory of Robert H. Dott Sr.
Kim Andrew Doud
Patrick Blair Dougherty
Harry Doust
Garnett M. Dow
James M. Doyle
James Alan Drahozval
Kenneth J. Drummond
Sebastien Gilles Duc
Harvey Richard Duchene
Herbert David Duey
William Leroy Duggan
Wolf-Christina F.A. Dulio
Robert Cullen Duncan
James Richard Dungan
Peter Durbin
John Harold Durrie Jr.
Jack Calvin Dyer
Steven Andrew Earle
Keith M. Eastwood
Donald Anthony Eck
In memory of H.V. Beck
Mary Elizabeth Eckhart
Craig Anthony Edmonds
James Michael Edwards
John H. Edwards III
Richard A. Eisenberg
Christopher Frank Elders
Jason Wade Eleson
Mark H. Elliott
Trevor Elliott
William S. Elliott Jr.
David Parry Ellis
Edward John Elyard
Wolfgang Eugene Elston
Michael Ipu Ermang
Franklyn R. Engler
Eric Alan Erslav
Parrish N. Erwin Jr.
Adegbenga Oluwafemi Esan
Robert W. Esser
Antoine Fabre
William Fairhurst
Robert Harry Fakunding
Emmanuel Oroniyi Falobi
Nathaly A. Faniglietti
Niles Richard Faulk
Barbara L. Faulkner
Jurgen Faupel
Michael Davis Fawcett
Leo F. Fay
Glenn Marion Fedderston
David R. Feineman
In memory of Parke Dickey
Michael Alan Fenton
Robert Bruce Ferguson
Robert Thomas Fetters Jr.
Cary Lewis Fico
Eduardo Guillermo Figari
Richard H. Filion
Linda A. Finch
In memory of William R. Stanton
John C. Fitzmaurice
In memory of Sean Fitzmaurice
Gregory Brian Flynn
William Jack Ford
John L. Forman
Michael C. Forrest
Helen Laura Foster
Thomas Dee Fouch
Matthew J. Frankforter
Stephen K. Frazier
Kenneth R. Frech
Kenji Hirabayashi
Roger Alan Freidline
Michael C. Friederich
Eric Wells Frodesen
Mark William Frye
Takashi Fukuda
Lawrence W. Funkhouser
Gilbert Gaines
Mark Joseph Gallagher
Sidney Stewart Galpin
Gary L. Galyardt
Arthur John Garden
John Michael Garihan
Richard Anthony Garrard
Larry R. Gaston
Keith Dennis Gerdes
Ashton Blanchard Geren Jr.
Kenneth Work Germond
James A. Gibbs
In memory of Joseph R. Huffstetter
Richard G. Gibson
William Carleton Gibson
Gerald Macon Gilbert
John Edward Gilcrease
Ernest Carlyle Gimblet
William E. Gipson
Howard Bruce Glassman
Gina B. Godfrey
Renee Clary Godley
Cory John Godwin
Dieter Martin Goehner
Stephen M. Golas
Jerry Bruce Golden
Beatriz Victoria Gomez
Ian Robert Gordon
Donn Sherrin Gorsline
Charles Arnold Gorveatt
Bob Gose
Robert McCary Grace
James Victor Grant
Kim P. Granow
Peter Gordon Gray
In honor of Donald A. O'Nesky
Wayland Eugene Gray
A.T. Green Jr.
In memory of H. Grady Collier
Howard Russell Green
Laurence Andrew Green
William Randolph Green
William Jeffries Greer
C. Claire Gregg
In memory of T. Keith

David D. Dernick
Peter Ulrich Diebold
Peter Diebold
Indraman Halim Dihadjda
Robert Floyd Dill
Edward G. Dobrick
Evelyn M. Turpin Dookery
In memory of W. Lyle Dookery
Timothy Alan Dodd
Donald D. Dodge Jr.
Warren J. Doenz
Charles A. Doh
David J. Doherty
George Dolezal Jr.
Kenneth Thomas Dorbandt
Donald W. Dom-Lopez
Robert Henry Dott Jr.
In memory of Robert H. Dott Sr.
Kim Andrew Doud
Patrick Blair Dougherty
Harry Doust
Garnett M. Dow
James M. Doyle
James Alan Drahozval
Kenneth J. Drummond
Sebastien Gilles Duc
Harvey Richard Duchene
Herbert David Duey
William Leroy Duggan
Wolf-Christina F.A. Dulio
Robert Cullen Duncan
James Richard Dungan
Peter Durbin
John Harold Durrie Jr.
Jack Calvin Dyer
Steven Andrew Earle
Keith M. Eastwood
Donald Anthony Eck
In memory of H.V. Beck
Mary Elizabeth Eckhart
Craig Anthony Edmonds
James Michael Edwards
John H. Edwards III
Richard A. Eisenberg
Christopher Frank Elders
Jason Wade Eleson
Mark H. Elliott
Trevor Elliott
Kenneth Walter Carlson
Neils R. Carlson
William Douglas Carlson
Mario Carminatti
Timothy Robert Carr
Hubert Francis Carson
James E. Carter
Jack Cleveland Cartwright
Francisco F. Carvalho
Eric James Casazza
Robert Lee Cash
John Kelly Cassell
Martin Macdermott Cassidy
In support/AAPG publications pipeline
Gary Paul Casteel
David Andrew Castillo
Paul Anthony Caccosinos
In memory of Charles F. Dodge III
Michael Daniel Caulfield
In memory of Terry Bicknell
Clarence Peter Cazalot Jr.
Thomas Leland Chamberlin
John Judson Chapman
In memory of William Wallis
Robert Mills Chapman
Kenneth John Chew
Don J. Christensen
Carlo Charles Christina
Stewart Chuber
In memory of William R. Stanton
John C. Fitzmaurice
In memory of Sean Fitzmaurice
Gregory Brian Flynn
William Jack Ford
John L. Forman
Michael C. Forrest
Helen Laura Foster
Thomas Dee Fouch
Matthew J. Frankforter
Stephen K. Frazier
Kenneth R. Frech
Kenji Hirabayashi
Roger Alan Freidline
Michael C. Friederich
Eric Wells Frodesen
Mark William Frye
Takashi Fukuda
Lawrence W. Funkhouser
Gilbert Gaines
Mark Joseph Gallagher
Sidney Stewart Galpin
Gary L. Galyardt
Arthur John Garden
John Michael Garihan
Richard Anthony Garrard
Larry R. Gaston
Keith Dennis Gerdes
Ashton Blanchard Geren Jr.
Kenneth Work Germond
James A. Gibbs
In memory of Joseph R. Huffstetter
Richard G. Gibson
William Carleton Gibson
Gerald Macon Gilbert
John Edward Gilcrease
Ernest Carlyle Gimblet
William E. Gipson
Howard Bruce Glassman
Gina B. Godfrey
Renee Clary Godley
Cory John Godwin
Dieter Martin Goehner
Stephen M. Golas
Jerry Bruce Golden
Beatriz Victoria Gomez
Ian Robert Gordon
Donn Sherrin Gorsline
Charles Arnold Gorveatt
Bob Gose
Robert McCary Grace
James Victor Grant
Kim P. Granow
Peter Gordon Gray
In honor of Donald A. O'Nesky
Wayland Eugene Gray
A.T. Green Jr.
In memory of H. Grady Collier
Howard Russell Green
Laurence Andrew Green
William Randolph Green
William Jeffries Greer
C. Claire Gregg
In memory of T. Keith

Robert Kern Johnson
David Johnston
Matthew Allen Johnston
Dewey John Jones
Richard Anthony Jones
Steven D. Jones
In memory of John Forman
Vern Cleo Jones
Robert R. Jordan
Teresa Eileen Jordan
Clinton Wiley Josey Jr.
Fred C. Julander
John M. Kachelmeyer
Shigeyoshi Kagawa
Thomas Kalan
William Henry Kaness
Thomas Patrick Kastner
Tadamu Katahira
David J. Katz
William Kenneth Keag
Peter A. Kelley
Patrick F. Kelly
Robert H. Kelson
Masahiro Kida
Deane Earle Kilbourne
Fiona Elizabeth Klambide
Cem Okan Kilic
Robert S. King
George Y. King
Maria Elena King
Victor H. King
In memory of John Forman
Howard George Kinzey
Joseph F. Kirchner
Rodney Lee Kirkland
John A. Klambzuba
Robert Ernest Klambzuba
Pete John Kientos
Walter P. Klewener
David F. Kluesner
Steven Thomas Knapp
Allen Mathew Knight
Randolph James Koepsell
William F. Koerschner II
Kazumasa Koide
Hemin Koyi
Darrell L. Kramer
Robert F. Kraye
Frank William Krieger
Tom Leo Heidrick
Yves Adrien Hellenbein
Carl Helms Jr.
David Rex Henderson
Donald Edward Henkel
Philip Duryea Heppard
William Francis Hermen
Gary Charles Herring
Donald Alan Herron
Alan Peter Heward
Mark Jon Lahr
William Charles Lake
John Douglas Laker
Les Lambert
Susan M. Landon
Todd Philip Lannert
Robert Joseph Lantz
Sven Yngve Larsson
Stanley J. Laster
William Brown Lathrop
Laurence Harold Lattman
Bernard Philippe Laugier
Jeffrey L. Lawton
J. David Lazor
Karen Jeanne LeBaron
Rufus Joseph Leblanc
Kay Lani Lee
Vincent A. Lefebvre
Eberhard M. Lehmann
Morris W. Leighton
Richard Charles Lenzer
Martin John Lester
Donald Clement Le Van
In memory of Daniel N. Miller
Robert Irving Levorsen
John Porter Lewis
In memory of William Brinker
Walter Scott Light Jr.
James D. Lightner II
Jeffrey Parrish Linscott
Gary Wayne Litschke
Henry Livingstone
Brian Edward Lock
Frederic Brewster Loomis
Nikolai V. Lopatin
Carlos Alberto Lopes
Robert David LoPiccolo
In memory of P.M. (Mac) Jones
Grant Kenar Los
Glady S. Louke
Monzell R. Louke
James Warren Lovakin
Steven R. Lovrak
Leslie Lee Lundell
Dag Lundqvist
John Craig Luzena
Craig Alfred Lyon
Robin Loss Lyon
In memory of Billy D. Allen
Caum Ian Macaulay
Robert Bruce MacDonald
Carlos E. Macellari
Alexander H. MacKay
Donald Bradford
Nidia Lourdes Maerfat
Edward F. Magdaeno
Leslie Blake Magoon III

Richard David Maguire
Glen William Mah
Robin Carl Mann
Claudio Dario Manzollino
Francis C. Marchal
Ronald Joseph Marr
Carl Attilio Marullier
Jack Winston Marshall
Thomas R. Marshall Jr.
Juergen D. Marsky
Aiden Jeffrey Marlin
Jack Philp Martin Jr.
Wayne Dudley Martin
Louis Martin Martinez
Naokimizu Masanu
Erik Paul Mason
John William Mason
In memory of Thomas Lyons
Peter John Massion
Bernard Jean Mathey
Florentin J. Mauraesse
In memory of John Sanders
Eugene L. Maxwell
John Reed Maxwell
David J. May
Edward Henry Mayer
Mark Kevin Mayo
Michael Frane McCauley
Mark Howell McClellan
Harold Yukim McClure
Louis L. McCormick Jr.
Mark Douglas McCuen
James McDonald
James S. McGhaly
Donald Dea McGirk
Benjamin Joe McKenzie
Clifton Daniel McLellan
Claude L. McMichael
William J. McMichael
In memory of Fred Spindle
Jennifer Dawn McPhail
Asa Duncan McRae
In memory of Kenneth Keller
Michael R. McWilliams
William Richard Meaney
Gerard Medaisko-Delorme
Robert E. Megill
John Harold Melby
Adrian Christopher Melini
Angela Susanne Melvin
John Melvin
Laurence S. Melzer
Gary Mercado
Daniel Francis Merriam
Richard Fastabend Meyer
In memory of Hunter Yarborough
Louis Henry Michaelson
Edward George Mickel
Angela Marie Miller
Bruce Patrick Miller
David Hunter Miller
Jim Patrick Miller
Michael Eugene Miller
Madelyn Ann Millholland
Marcus Eugene Milling
Robert James Mills
Susan Dearborn Mills
William Clark Millsbaugh
Khuro Mirza
Robert Mitchell Mitchum Jr.
Akira Mizobe
Richard Milton Model
Yusufza Mohd Sullian
Emil Monsour
In memory of E.T. "Mike" Monsour
Miguel Montes
Richard Thomas Jones Moody
William Clyde Moody Jr.
John Edward Moody
Forrest Moore
Ronald Roy Moore
Thomas Edward Moore
Thomas Randolph Moore
Geoffrey M. Morris
Stanley Ray Morris
David Watts Morrow
Neil Gerard Moss
Mike Seymour Mount
Brett Stephen Mudford
David Robert Muerdter
Arthur C. Mullenax
Eulalia Munoz
David J. Murphy
Edward Gilpin Murphy
Sally M. Murray
William Gerard Murray
Donald Paul Muth
Toshiaki Nagai
Stephen R. Narr
Steve Natali
Larry Nation
Luis Navarrete
Monte Lynn Naylor
Pieter Jan Nederlof
Toshio Nagishi
Norman S. Neidell
Robert Lynn Neman
Kathleen M. Neset
Peter Lee Nester
Kerry David Newell
Dang Lan Nguyen
Elizabeth Mercy Nichols
Howard Timothy Nicholson
Kenneth Wesley Nickerson
Alan B. Nicol
Leslie Owen Niemi
Kori Kristen Norberg
James Austin Norton

Owen William Nugent
Walter Edward Nunan
Charles Phillip O'Brien
William D. O'Brien
Thomas Edward O'Connor
Mark Kevin Odegar
Nobuyuki Ogura
F.X. O'Keefe
Saleh Mohamed Okla
Leslie Ann Olinger
Lawrence John Oliva
Henry David Olson
Lewis Merle O'Neal
Donald A. O'Nesky
Maurozio Orlando
Howard M. Orlean
Robert Anselm Orlanda
William F. Osborn
Robert Brett O'Sullivan
Carole Otte Jr.
Carl Milton Padgett
Ricardo Padilla y Sanchez
Jeffrey John Palmer
Arthur L. Paquet
Mark Alan Parchman
Richard Lee Parker
Fiona Elizabeth Parker
Karl L. Parson
Dennis Michael Paterson
Elmer Davison Patterson
James Lancaster Payne
Hugh William Peace
In memory of Dan Towns
Kelley H. Peace
Barbara L. Pearl
Everett Wilfred Pease
William S. Peirce
S. George Pemberton
Jeroen Martien Peters
Clark Allen Petersen
Benjamin Leland Peterson
Eric Wade Peterson
Fred Peterson
James Algert Peterson
Michael John Petratis
Andrew Jackson Petty
Kenneth Duane Plau
Warren Yale Pickering
Richard Lee Pignone
William Gene Pittman
In memory of Franklin C. Jones
David A. Pivnik
John Francis Polasek
Craig Donald Pollard
Richard M. Pollastro
David Bryan Pool
J. Michael Poole
Jacob L. Porter
Robert Lloyd Pott
Gordon Sandy Prather
In memory of Danny Conklin
David Neil Pratt
Ernest George Pratt
Christopher M. Prince
Edward G. Purdy
J. Michael Pusley
Malcolm Ian Anthony Pye
William Moore
Quackenbush
Duane Carl Radtke
Paul Moore Rady
Donald James Rae
James Franklin Ralstin
Felix Antonio Ramirez
Wilson R. Ramirez
Craig Stephen Rankin
Prenna M. Rappold
Gene Austin Ratcliff
In memory of Dean McGee
and Hunter Yarborough
Christopher Arthur Rautman
Keith Reginald Rawlinson
Robert Lee Rayl
John Graves Raymond
Jeffrey M. Rayner
In memory of Charles F. Green
Jonathan Redfern
Tom W. Redin
David Anderson Reel
Jonathan Constable Reeve
Elwin Karl Reichert
Eugene F. Reid
Samuel George Reiser Jr.
John I. Reistrotter
Edusard Zachery Reiter
Robert R. Remy
Henry Hamilton Rensison
David Gene Rensink
Fritz W. Reuter
Marcus Trevor Richards
William Charles Richmond
Wade Clark Ridley
Manuel Rigo De Righi
William Michael Rike
David S. Rippee
Neil Ritson
L. Chase Ritts Jr.
Francis Rivier
Jess Perry Roach
Roy Eldon Roadifer
Raymond King Robbins
Stanley Edmund Rode
John W. Rold
Dennis Mark Rouse
Roy Alexander Rudichuk
Brian Gerard Ruskin
Brian H. Russell
Muhammad Salfar
Mohamed Mahmoud H.

Said
Yuichi Saito
Sarah D. Saltzer
Andrew Samuel
Thomas Wayne Sandefur
Nestor John Sander
John Robert Sanders
Hiroyoshi Sano
Luther Weidner
Sappentfield
William Sarni
Robert R. Sartain
Satoshi Sasaki
Toshiaki Sato
Robert L. Scamman
Rainer G. Schaefer
Henry Joachim Schaefti
David J. Schaper
John Edwin Scherer
Michael Scherrer
Frank R. Scheubel
William Michael Schill
James Cameron Schmidt
Gerald Herman Schmit
William David Schneider
Wolfgang E. Schollnberger
Edward Schreiber
B. Charlotte Schreiber
Jack Schrenkel
James Henry Schriber
Norman West Schultz
Theresa F.F. Schwarzert
In memory of Rudy R. Schwarzert
David M. Scull
John David Seale
David Richard Sedgely
Timothy Paul Seeley
Karl Seibert
Hiroyuki Seki
Samit Sengupta
Gregory F. Ullmishak
M. Syatulu Uman
Sadao Unou
William J.E. Van De Graaff
Jules P. Van Den Beukel
Charles W. Van Eaton III
Jack Richard Van Lopik
Jan Franklin Van Sant
Arthur M. Van Tyn
Jack William Shirley
Vinton Hubbard Shoil
Robert Charles Shoup
Jeffry Shrawlow
Kurt Eugene Sickle
In memory of William K. Barker
William James Siebert
Rudolf B. Sievert
John Carl Sieving
J. Donald Silberman
John H. Silcox
Homer Fischer Simmons Jr.
Iyabode Tokunbo Sindiku
Updesh Singh
Alan Sinnott
Mark Alan Sippel
Kam Hong Sit
Prokopis Sivenas
William Alton Skees
Wade Kirkpatrick Skelton
Isaac Edwin Skillern
Michael L. Slavin
Gordon Smale
D. Craig Smith
Justin Smith
Lawrence Ralph Smith
In memory of Mike Chequer
Ru D.A. Smith
Tad Monnett Smith
Brian McKenzie Smyth
Paul Wayne Snow
Dicky Eddy Soedigjo
Steinar Soerensen
Young Kwan Sohn
George L. Sorour
John Stanfield Spaid
Allen Rathjen Spielman
Jacopo Spinnler
Harry V. Spooner Jr.
David Edward Spring
Richard Lawrence Stallings
In memory of Murry Beckman
Eric J. W. Standen
Thomas E. West Jr.
Robert Bruce Wheeler
David Archer White
Patrick Whitley
Adam Bennett Whitman Jr.
Hans Widmer
John Michael Widmer
Robert Arnold Wiener
Peter Wigley
John Thomas Williams
Kirk Daniel Williams
Pat Edward Williams
Robert Stewart Williams
Clifford L. Willis
Gregory Allen Wilson
James Edmund Wilson
James E. Wilson Jr.
Mark Dale Wilson
Todd Montgomery Wilson
Richard Lambert Winborn
Weldon Otto Winsauer
Jeremy Crosby Wire
James Wood
Richard A. Woodall
Jovna Brasch Woodberry
Sharon Diane Woods
J.G. Woodward
Meredith R. Worden
Warren George Workman
Chelsea Wraithall
Timothy Francis Wright
Tao Wu
Jianhong Xu
John A. Yamada
Kexian Yang
Grandchi Subbarao
William Lahue Suddertth
Cynthia G. Suek
David Henry Suck
Harold H. Sullivold
Andreas Karlis Svalbe
Kip Edward Swaine
Sonia Swartz
John McCamey Sweet
Leo E. Swick Jr.
Gary Allen Swits
John Endre Szatai
Allen Y. Tamura
Charles Joseph Tapper
James B. Taylor Jr.
Michael Wright Taylor
Nicholas William Taylor
In memory of Charles N. Cross
Donald Paul Teason
Robert Keith Templeton
Robert T. Terriere
John Robert Terwilliger

Irving Howard Tesmer
Nikos D. Thomaidis
In memory of William H. Curry Jr.
Gary L. Thomas
Mark Edwin Thompson
Mark Jonathon Thompson
Willis Herbert Thompson Jr.
Arve Konrad Thorsen
Jack Marcus Thorson
Jack C. Threet
In memory of Eloise Wilson
Kenneth Scott Tillman
James Harold Tindall
Clarence Norman Tinker
Don F. Tobin
Raymond Charles Todd
Tomochika Tokunaga
Stephen Robin Tomlin
Donald F. Towse
Dick A. Tracy
James Cameron Traxler
Edwin Leslie Trice III
James Kendall Trigger
Charles Eugene Trowbridge
Andrei Tudoran
John D. Tuohy
James Rickey Turner
Robert Turner
Scott Turner
In memory of L. Glenn Rader
Charles Dwight Tyler Jr.
In memory of Henry C. Smith
Willis Woodbury Tyttel Jr.
In memory of J. Wayland Roberts
Maw Zone Tzeng
Gregory F. Ullmishak
M. Syatulu Uman
Sadao Unou
William J.E. Van De Graaff
Jules P. Van Den Beukel
Charles W. Van Eaton III
Jack Richard Van Lopik
Jan Franklin Van Sant
Arthur M. Van Tyn
Jack William Shirley
Vinton Hubbard Shoil
Robert Charles Shoup
Jeffry Shrawlow
Kurt Eugene Sickle
In memory of William K. Barker
William James Siebert
Rudolf B. Sievert
John Carl Sieving
J. Donald Silberman
John H. Silcox
Homer Fischer Simmons Jr.
Iyabode Tokunbo Sindiku
Updesh Singh
Alan Sinnott
Mark Alan Sippel
Kam Hong Sit
Prokopis Sivenas
William Alton Skees
Wade Kirkpatrick Skelton
Isaac Edwin Skillern
Michael L. Slavin
Gordon Smale
D. Craig Smith
Justin Smith
Lawrence Ralph Smith
In memory of Mike Chequer
Ru D.A. Smith
Tad Monnett Smith
Brian McKenzie Smyth
Paul Wayne Snow
Dicky Eddy Soedigjo
Steinar Soerensen
Young Kwan Sohn
George L. Sorour
John Stanfield Spaid
Allen Rathjen Spielman
Jacopo Spinnler
Harry V. Spooner Jr.
David Edward Spring
Richard Lawrence Stallings
In memory of Murry Beckman
Eric J. W. Standen
Thomas E. West Jr.
Robert Bruce Wheeler
David Archer White
Patrick Whitley
Adam Bennett Whitman Jr.
Hans Widmer
John Michael Widmer
Robert Arnold Wiener
Peter Wigley
John Thomas Williams
Kirk Daniel Williams
Pat Edward Williams
Robert Stewart Williams
Clifford L. Willis
Gregory Allen Wilson
James Edmund Wilson
James E. Wilson Jr.
Mark Dale Wilson
Todd Montgomery Wilson
Richard Lambert Winborn
Weldon Otto Winsauer
Jeremy Crosby Wire
James Wood
Richard A. Woodall
Jovna Brasch Woodberry
Sharon Diane Woods
J.G. Woodward
Meredith R. Worden
Warren George Workman
Chelsea Wraithall
Timothy Francis Wright
Tao Wu
Jianhong Xu
John A. Yamada
Kexian Yang
Grandchi Subbarao
William Lahue Suddertth
Cynthia G. Suek
David Henry Suck
Harold H. Sullivold
Andreas Karlis Svalbe
Kip Edward Swaine
Sonia Swartz
John McCamey Sweet
Leo E. Swick Jr.
Gary Allen Swits
John Endre Szatai
Allen Y. Tamura
Charles Joseph Tapper
James B. Taylor Jr.
Michael Wright Taylor
Nicholas William Taylor
In memory of Charles N. Cross
Donald Paul Teason
Robert Keith Templeton
Robert T. Terriere
John Robert Terwilliger

Jim A. Blackwood
Edmund Jeremy Bower
Mark A. Bronston
Barry Wayne Burkhardt
James C. Burns
Jennifer Lynn Burton
Kim Robert Butler
Warren D. Cadwell
David Anthony Cagle
In memory of William Craig (Uno)
Stephen John Calvert
Lisa M. Campbell
Terry R. Carter
Tom Ann L. Casey
Gregory James Cave
Marijyn Tagg Cisar
Michael Eugene Clark
Roy L. Clement
Thomas Arthur Cloud
Louis J. Conti
Marc R. Cooper
Jason Charles Cox
Thomas Paul Cronin
In memory of Andrew A. Sestor
James H. Cropp
Helen F. Cunningham
In memory of Stuart P. Hinchay
Keith E. Curtis
Wallace De Witt Jr.
Kenneth Richard Dice
Fred A. Dix Jr.
Louis H. Du Bois
Marc Dupuy Jr.
Michael D. Emmerling
William Fairhurst
Charles T. Feazel
Michael Donald Ferguson
Robert William Fisher
Laurens Gaarenstroom
David Hendrix Glenn
In honor of Donald L. Ziegler
Larry Dee Gore
Rick Eugene Grubbs
Edmund Richard Gustason
Alan Kenneth Hadfield
Peter Kevin Haehae
Karin Hagan
Janet Ann Haggerty
Michael A. Halpin
Myra Lynn Hamburn
Andrew S. Harper
John George Hattner
Ellen M. Hauge
Ronald Murray Hedberg
In memory of Hollis D. Hedberg
Karl Gordon Henck
Raymond Paul Henkel
Janice Lorraine Hill
Stuart Hirsch
Gustavo W. Hobbs IV
Paul F. Hoffman
Michael Frances Hoffmann
Terry L. Holrah
Gerhart E. Hunter
John "Rusty" Johnson
Ragnar E. Johnson Jr.
Michael Dean Karvelot
Patrick F. Kelly
Robert M. Kieckhefer
Thomas C. Kiekamp
In memory of Wayne Arthur Pryor
Lawrence Mark Larsen
Edwin Clive Lookabaugh
Geraldine Amelia Lopez
Kenneth Mark Mallon
William V. Maloney
Olav Malvik
Ben A. McCarthy
Hugh Geoffrey McDowell
Walter W. McMahan Jr.
Sandra Meyer
Eva P. Moldovanyi
Thomas Holt Murray Jr.
Frank Anderson Murrell
Janthe Nelson
In memory of Peter Nelson
Peter H. Northrop
Takami Okazaki
Botosan O. Omatsola
Kelly Lauren Opie
Charles Folger Oudin III
Thomas Martin Parris
Daniel B. Pearson III
In memory of Josiah Taylor
David Max Petty
Peggy S. Pogue
Richard Lee Puley
Michael Joseph Quinn
Diane L. Ramirez
Barry Joseph Rava
William F. Ripley
James D. Robertson
James K. Roche
Robert Rooney
Louis Jay Rothenberg
In memory of David Rothenberg
Denise Kay Kulhanek
Rowse
William Mark Rush
David Cooper Satter
In memory of Harold F. Hazel
Sharon M. Sartain
In memory of Jerry Cooley
Timothy Allen Schilt
Erik D. Scott
William E. Sermelbeck
Douglas Jay Seyler
Kelley Frances Shannon
Andrei Sivilnikov
Joseph Kevin Skees
Damiir Slepjan Skerl
James Edward Slosson
Robert Russell Smart
In memory of John Forman
John Charles Smith
Marilyn L. Smith
Jeri Murray Sosnosky
Donald James Staples
John Russell Stephens
Anthony Edgar Stephenson
Gregory Lee Stewart
Joseph Robert Straccia
In memory of Mary Ellen Straccia
Mark Haynes Strider
In memory of Haynes Strider
Albert Yen Sun
Stephen J. Sztylik

Pratt BULLETIN Fund
Thomas Davies Barrow
K-12 Fund
Zuwena Salim Al-Rawahi
William F. Bandy Jr.
Dean Charles Barnum
Maurice William Baron Jr.
In memory of Saul Anonow
Jim L. Barr
In memory of Kimberly Barr
John William Bedford

continued from previous page

Michael Robert Taylor
Jon Louis Thompson
Karla E. Tucker
Bruce John Uszynski
Glen Edward Vague Jr.
Robert L. Williams Jr.
Gordon K. Yahney
Donald R. Young
Rongmao Zhou

Digital Products Fund

Craig F. Anderson
Richard B. Banks
Brady Hamilton Brown
James C. Burns
Adrian James Burrows
Francisco Javier Cardona
Caren J. Chaika
Warren Glenn Cook
Gil Davila Soriano
Paul J. English
Dennis J. Fischer
Gary Wayne Ford
Masaki Funayama
Matthew Hall
Hiromi Honda
Brent Frederick Hopkins
Dushmantha H.
Jayawickreme

John Harris Jostes
Robert Stan Jumper
Glenn Lee Krum
Lawrence D. Lemke
Kristine Ann Y. Macaluso
Peter Hotchkiss Masson
Jerry Glen McCaskill Jr.
L. Douglas McKee
John Michael Mitsdarfer
Edwin Umeadi Nwaeri
Peggy S. Pogue
Skylar Lawrence Primm
Russell Emerson Quick
Philippe J.Y.M. Rabiller
Jay Warren Rauschkolb
Joachim Wilhelm Reinhardt
Virginia L. Riggert
Luther Franklin Rogers Jr.
Daniel Lester Smith
Gregory John Smith
Steve M. Smith
Christian Daniel Steck
Shinichi Tamura
Carolina Torres
Monica M. Turner
John Winters Walker Jr.
Kenneth Dwight Webb
Christopher J. Whitten
Raymond E. Willis
Herbert Arthur Young

Grants-in-Aid Fund

Maria Nelida Ahumada
Alexei L. Alexeev
Peter W. Anderton
John W. Armon
Wenche Helena Asyee
Noelia Baptista

Randall Allen Barta
Frederick Almet F. Berry
In memory of A.I. Levorsen
Keri L. Borres
James E. Briggs
James Alexander Brown Jr.
Philip Rodney Brown
Jeffrey Wayne Bryant
H. Paul Buchheim
William Matthew Burns
Sara Carena
Jason Dennis Chaytor
Sourmya Das
In memory of Chandri Charan Das
Rodger Espy Denison
In memory of John Forman
Valerie J. Doolittle
Lee Hamlin Fairchild
William Fairhurst
Emily Suzanne Finzel
Paul Woodward Foster
John A. French
Kellie Ann Frew
Peter Bradford Gamwell
Chester M. Garrett Jr.
In memory of Fred Bullard
Samir Abd-El-Rahman Ghazi
Anthony Charles Gibson
M. Charles Gilbert
In memory of George Huffman
Robert Nathan Ginsburg
In memory of Real

Turnel
Angel Patricio Gonzalez
Howard Ross Gould
Anne Grau
John Frederick Greene
In memory of Norm Foster
Christine M. Griffith
Gilmor Semmes Hamill IV
In memory of Glen Ledingham
Nedra Keller Hansen
In memory of Kenneth Keller
William E. Nellist
Matthew J. Parsley
In memory of Clay Parsley
William Tate Phelps
Neil Andrew Hilton Pickard
Ted Eric Playton
John Kantz Preston
Gus Adams Reese
Scott Cleveland Reeve
Melvin Bruce
Rohrbaugh Jr.
Alba Betina R. Santos
J. Frederick Sarg
Patrick Jerome Schuneman
In memory of Linn F. Adams
Philip Gordon Scoggins
Keith Skipper
Robert Russell Smart
In memory of John Forman
Robert Ryland Smith
Mark David Sonnenfeld
Russell Wade Spears
Heather Iris E. Stanton

Richard Allan Lorentz Jr.
Philip Lowry
Hongjun Luo
Richard Paul Major
Jeffrey A. May
Joseph Michael McKruff
James C. Morgan
Haydn Herbert Murray
Bryan Musgrave
Richard Brian Nagai
In memory of Frank Bell
William E. Nellist
Matthew J. Parsley
In memory of Clay Parsley
William Tate Phelps
Neil Andrew Hilton Pickard
Ted Eric Playton
John Kantz Preston
Gus Adams Reese
Scott Cleveland Reeve
Melvin Bruce
Rohrbaugh Jr.
Alba Betina R. Santos
J. Frederick Sarg
Patrick Jerome Schuneman
In memory of Linn F. Adams
Philip Gordon Scoggins
Keith Skipper
Robert Russell Smart
In memory of John Forman
Robert Ryland Smith
Mark David Sonnenfeld
Russell Wade Spears
Heather Iris E. Stanton

Michael Patrick Stephens
Joseph Edward Sullivan
Alan Orval Swarm
Ronald E. Tepley
In memory of Jim Milliken
Janet Bauder Thornburg
In memory of Jerome Thornburg
Page Charles Twiss
In memory of Ronald K. Deford
Luis Carlos Vaillard
William Joseph Whaley
John Glynn Williams
Fernando J. Zuniga-Rivero

Harold Funkhouser
Named Grant
Schwab Fund for Charitable
William E. Crain

Bernold M. "Bruno" Hanson
Named Grant
James Eugene Brown
Edward K. David
Dexter Lee Harmon
Kenneth G. Johnson

Merrill W. Haas
Named Grant
James Bruce Coffman

John E. Kilkenny
Named Grant
Grosvenor Brown
Robert Loren Countryman
Pacific Section AAPG

R.E. McAdams
Named Grant
Virgil John Kennedy

Arthur A. Meyerhoff
Named Grant
John Melvin Henton Jr.

Sherman Wengerd
Named Grant
Charles Dennis Irwin Jr.
Patrick John F. Graiton
Sara Marie Gratton

W. David Wiman
Named Grant
Stephen Kent Wiman

Continuing Education Fund
Grace Onyemowo Egba

Daniel A. Busch Library Fund
Douglas John Guion

Distinguished Lecture Fund
David Barr
James J.J. Broten
Leonard Franklin Brown Jr.
In memory of David Frazier
Raymond Buchanan
Janis E. Cairnes
In memory of Sherman A. Wengerd
John Watson Carey
In memory of Mortim N. Kline
Tom Ann L. Casey
John Leonard C. Chambers
Gloria June Chronos
In memory of Joseph Huffstetter
James W. Collinson
In memory of Bill Rector
Tilman Webb Cooley Jr.
Adam Neil Craig

Aureal T. Cross
David Neil Dewhurst
Elói Dolivo
Hugh Dresser
In memory of Myron A. Dresser
William Fairhurst
Michael Edward Fittall
Alejandro Enrique Franco
Victor Hugo Gabela
Robert Nathan Ginsburg
In memory of Real Turnel
Michael Goertz
Larry Michael Grace
Gary Sam Grinsfelder
Richard Hughes
Grosghong Jr.
Kelly Gamble Hartshorn
John George Hattner
Marie J. Hill
In memory of Mason L. Hill
Wendy Faye Hoffman
Frank Thompson Ingram
James C. Jones II
In memory of Candy Jones
Jeffrey Tyler Jones
John Robert Kerns
In memory of Wally Stewart
Keith Arthur Kvernolden
Gregory Martin Larberg
In honor of Barbara Davis
William Edward Legler
Michael Kelly McInerney

George Stanley McJannet
Tomonari Minezaki
Douglas Keene Morton
In memory of Wallace W. Stewart
Pieter Jan Pestman
Bernard Podolsky
Kenneth Potma
Roger M. Slatt
J. Todd Stephenson
In memory of Stanton M. Ball
Akihiro Tazawa
Dennis B. Tower
John D. Underwood
William Martin Whiting
Barry Gordon McLeod Wood

Gus Archie Development Geology Fund
Archie Gordon
James Joseph Parr
In honor of Bob Snieder

Operating Fund
Roger Gordon Alexander Jr.
In memory of H.D. Klemme
Sherry Hyer
In memory of Elloie Wilson, Nabeela David, Bill Curry

Systems Conflict

from page 12

been generated in Unix systems. "I don't think we will see any databases for PCs in the near future," he said, "but as long as solutions in the form of links can be developed, then that problem can be overcome."

Such a link will become available this year: Open Spirit is a link developed specifically to connect Unix and PC systems.

"With this link an end user can retrieve data from the corporate database, conduct their work and then read the data, along with any changes made to the data, back into the corporate database," Wulff-Pedersen said. "In this way everybody is working with the same dataset."

Open Spirit was developed within Shell and other companies, but today it has been spun off into a stand-alone firm.

"Open Spirit is creating a layer to move data smoothly between the corporate database and applications - it doesn't matter if it is a PC or Unix application," Wulff-Pedersen said. "This is a huge benefit, since it eliminates the need to create another PC-based database."

To justify the costs associated with a massive changeover to PC systems there has to be fundamental changes that move technology forward in terms of applications and functionalities.

For example, a pilot program to utilize a cluster of dual processing PC class computers is being developed at Conoco in Houston, to be used in parallel computation for 3-D visualization projects.

Over time more fundamental changes will occur, according to Jim Sledz, Conoco's director of exploration information management strategy.

"If you ask five oil companies what their timeframe for this type of change might be you would get a range from immediately to three years out," he said.

Roth agreed that, while he is seeing real excitement from the information technology community for PC-based systems, the change won't come fast. "Unix will still be here 10 years from now," he said, "but I do think a substantial number of users will be transitioning to PC-based systems as early as the end of this year and going into next year."

Wulff-Pedersen said that "we are developing tools today for the Nintendo generation - and that's a good thing."

"The workflow is becoming more like an interactive game than a struggle to get bits and pieces of information into a model," he said, "and that enhances creativity and new ideas." □

EXPLORATION SERVICES RESERVOIR SERVICE PRODUCTION MULTI-CLIENT 3D DATA

pdp pdq @ pgs

precisiondataprocessingprettydarnquick

At PGS Data Processing it's Precision and Quality first! Our innovative processing solutions with proprietary visualisation reveal data variances in more detail than ever before. Revolutionary speed in volume quality assurance and parameter evaluation, at each stage, means Precision Data Processing... PDQ. Contact us: pdppdq@pgs.com

PGS GEOPHYSICAL - DATA PROCESSING

USA TEL: +1 713 781 4000 AUSTRALIA TEL: +6 18 93209030 NORWAY TEL: +47 67 526400 UK TEL: +44 1932 260002 INDONESIA TEL: +62 21 7698038 EGYPT TEL: +20 2 2746181 UAE TEL: +971 2 6661877 Kazakhstan TEL: +7 3272 500374

OILFIELD TECHNOLOGY SOLUTIONS Visit our website @ www.pgs.com

INTERNATIONAL BULLETIN BOARD

(Editor's note: This column is devoted to international items of note to the AAPG, including the activities of AAPG-related groups around the world.)

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

By JACK THOMAS
AAPG Geoscience Director

This month we continue with discussion of two important meetings that will be held in Cairo, Egypt, and Hangzhou, China.

In each case, members of our

International Regions teams have played an important part in the planning and presentation of technical sessions, short courses and field trips that re-emphasize the need for continuous learning by AAPG members as they move through their careers.

To each of the members involved in planning these meetings, "thank you."

And to each of you who have the opportunity to attend either meeting, we hope you learn new facts or concepts that can be applied to doing your job better.

Enjoy the meetings!

Cairo International Conference and Exhibition

With a theme of "Ancient Oil – New

Energy," the Cairo 2002 meeting, set for Oct. 27-30, is attracting a great deal of interest and mounting enthusiasm. Mahmoud Abdul Baqi (Saudi Aramco), chair of the steering committee, and Mostafa K. El Ayouty (petroleum exploration consultant), general chair of the organizing committee, have inspired the committees to new levels of dedication.

The technical program committee has produced a program that promises to deliver an array of technical excellence – and with more than 500 technical abstracts received, attendees are sure to hear insights to support and expand the meeting's theme.

The short course committee has

developed a wide-ranging program of pre- and post-conference short courses sponsored by AAPG and SEG. Topics will include:

- ✓ Deep-water clastics exploration.
- ✓ Perspectives on international oil and gas ventures.
- ✓ Pore pressure prediction.
- ✓ Reservoir characterization using geophysical and geologic information.

The courses are sure to be a highlight of the conference and are another reason to come early to Cairo – and stay late.

Field trips, discussed in last month's column, will reinforce the applications of new technology. The energy and enthusiasm of this committee has set the bar high for field trips for future AAPG conferences.

Cairo 2002 is special because it is seldom that practicing geoscientists can learn about the latest technical advances in hydrocarbon production and look through the eyes of "the Ancients" at the same lands. To think of the Nubian Sandstone as a hydrocarbon reservoir and also a stone from which great temples were built centuries before our meeting is humbling. We need to listen to what the rocks tell us!

The conference announcement and exhibits information will be mailed and simultaneously available on our Web site (www.aapg.org) in early June. The pre-registration deadline will be in late September.

For information contact the AAPG convention department, at 1-918-560-2679 (phone); 1-918-560-2684 (fax); or convene@aapg.org.

Hangzhou Symposium

As you read this column, the "International Symposium on Chinese Petroleum Exploration in the 21st Century," including the second Forum on Marine Carbonate Reservoirs, has concluded in Hangzhou, China, hosted by the Chinese Association of Petroleum Geologists in conjunction with AAPG.

Honorary chairmen of the conference were Son Jian and Michel T. Halbouty. Over 450 attendees from China, Australasia and North America were extended invitations.

Like Cairo, Hangzhou has been an important city for many centuries. Their histories as marketplaces, locations of enlightenment and strategic locations near major oil and gas accumulations are revisited by AAPG members in 2002. Learning from the past helps to map the future of our industry. □



Where
successful A&D deals are done.

Get global reach, deal intelligence, and process efficiency with IndigoPool's data room solutions. Buyers access comprehensive information and tools to evaluate oil & gas properties — anytime, anywhere. Sellers concentrate on demonstrating asset value.

Value-based negotiations... confident decisions... greater deal success

Be a member. Register your company now at www.indigopool.com

For more information contact info@indigopool.com or call 713.350.4300.

 **INDIGOPOL.COM**
a Schlumberger company

021P054



AIRMAG SURVEYS, INC.
AIRBORNE GEOPHYSICAL & ENVIRONMENTAL SERVICES

HIGH RESOLUTION AEROMAGNETIC DATA ACQUISITION

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

NORTHEAST PHILADELPHIA AIRPORT
P.O. BOX 16157
PHILADELPHIA, PA 19114

PHONE: (215) 673-2012 FAX: (215) 464-2889
E-MAIL: AIRMAG@CompuServe.com
AIRMAGSURVEYS.com

www.update

Hey, Check Out 'Members Only'

By JANET BRISTER
Web Site Editor

Have you checked out our Web site's "Members Only" section and its features? Starting this month you can access the DPA directory.

Members of DPA have been qualified as certified petroleum geologists, coal geologists or geophysicists, and part of the privilege of that membership is a listing in the directory that DPA publishes.

Provided is all contact information, some background information about the person and the type of certification the DPA member has received.

The directory has a search engine that allows searching in several fields (see figure). They then are provided individually for the browser to view.

Sure, you'd rather have a complete list to print with your results, but directories are a great resource for harvesting contact information. Out of respect for privacy and a desire to control junk mailings, individual records are displayed one at a time, just like the membership directory.

This online directory is being provided in lieu of the printed directory – although for those who would like to have the entire DPA handy a CD is available for purchase.

* * *

Do you have your log-in information for the Members Only area?

This is one sign-in you probably should take time to attain. By this time next year you'll be able to enter this area and pay your membership dues, or even sign up for a joint membership in SEG or SPE.

Also, to facilitate only one AAPG log-in, this will be the portal to MemberNet and BulletinNet. Registering for a meeting online is another service coming your way, as well as being able to cast your vote for officers electronically.

* * *

When's the last time you spoke at a meeting and needed some slides as visual aids?

To help our members speak to students of all age levels, AAPG is building a Slide Bank to help speakers in their presentation.

Slides currently in the bank focus on industry information; however, as the slide bank grows we hope to provide good

illustrations about all aspects of a geoscientists' world.

The start of the bank is under the drop-down menu on the home page: Slide Bank.

More about that next month.

For now, Good browsing! ☐

SITE SEARCH
CONTACT US
SITE MAP

AAPG: Divisions > Division of Professional Affairs

American Association of Petroleum Geologists DPA Directory

Last Name:

First Name:

City:

State if US (abbr):

Country:

Company:

Available for Consulting?

© American Association of Petroleum Geologists (AAPG)
AAPG Home | Talk to AAPG | Feedback | Site Problems | DPA Information

Hints:

For most results just enter the first few letters in the person's last name then choose from the list that is found. No wildcard characters are needed.

You must input a last name in order to search by first name.

You must input at least one criteria to search on the Member Directory.

What a Difference an Ohm Makes...

IHS Energy Group
 Competitor

IHS Energy Log Services Five-Point Check List performed by petrophysicists, not computer analysts:

- Verify accuracy of digital log header data.
- Grid Detection System ensures that skew and warp are removed and rectified.
- Curve Vectorization defines and matches the curve types providing "wellsite equivalent" accuracy.
- Digital Overlay to verify accuracy.
- Final format review.

A few ohms can be the difference between plugging a well or producing it.

Accurate log data – whether it's vector or raster – is a critical element in your interpretative path to success. A few ohms one way or the other and your interpretation results can falter. Rely on the industry data experts, IHS Energy Log Services for the most complete and accurate log data:

• **Digital data for complete analysis:**

- Largest North American digital log coverage available.
- More logs per well than any other data provider.
- Digital log header data so you can environmentally correct the response of various logging tools.

• **Reduce log processing cycles with Petrophysical Data Processing (PDP)**

From depth matching and file merging through complex sonic and density editing, our PDP services are performed by petrophysicists with years of wellsite experience.

• **Quick and accurate Digitizing Services** for maps, seismic sections, geologic cross sections and logs.

Combined with our industry-standard production and well data, IHS Energy Log Services is the smart choice for log data.

IHS ENERGY GROUP
Log Services

Copyright 2002. All rights reserved. Petroleum Information/Dwights LLC d/b/a IHS Energy Group. All trademarks belong to Petroleum Information/Dwights LLC.

**Gulf of Mexico:
Cretaceous and
Jurassic Source Rocks
Full Well Report**

**Garden Banks 754
Phase I and Phase II**

www.humble-inc.com /GOM

Humble Geochemical

Telephone: 281-540-6050
Fax: 281-540-2864: Fax



Photo courtesy of Rudi Meyer

Geoscientists in Canada will have access to a mid-career training boost at the new Geoscience Professional Development Centre at the University of Calgary.

AAPG Funds Provide Means Canadian Training Center to Open

By SUSAN EATON
EXPLORER Correspondent

In June, as the Canadian Society of Petroleum Geologists (CSPG) celebrates 75 years of petroleum exploration with its Diamond Jubilee convention, one of the meeting's highlights will be the June 6 "open house" of Calgary's newest AAPG-sponsored training and development center.

Residing at the University of Calgary's

department of geology and geophysics, the Geoscience Professional Development Centre (GPDC) developed out of an AAPG-Canada Region initiative and the AAPG Executive Committee's commitment to assist its members in maintaining and upgrading technical skills.

The Calgary Centre is one of six mid-career training facilities sponsored by AAPG, and it represents the AAPG's second international training venue – the first opened earlier this year at Imperial College, London, England.

In 2000, the AAPG Executive and AAPG Foundation each contributed (US) \$25,000 of grants to kick off the GPDC, with the monies going toward purchase of hardware and furnishings.

Financial support and solidarity followed from the Canadian geoscience community:

- ✓ The CSPG and the Canadian Society of Exploration Geophysicists (CSEG) each contributed (CAN) \$10,000 for the Centre's first year of operation.
- ✓ The Society of Exploration Geophysicists (SEG) donated (US) \$20,000 for the purchase of hardware and furnishings.
- ✓ The Association of Professional Geologists, Geophysicists and Engineers of Alberta (APEGGA) pledged (CAN) \$10,000 each year for three years toward the operation.

Additional fund-raising efforts are under way, targeting the Alberta government.

State-of-the-Art Capabilities

The GPDC boasts a state-of-the-art computer lab that is equipped with 20 dual-monitor, high-end personal computers and required peripherals, including a petroleum data base software donated by IHS AccuMap Ltd. The AccuMap software provides the student with an integrated software and data solution for oil and gas exploration in Canada and the United States.

Negotiations are under way with other service sector companies to obtain donations of geological and geophysical software.

The University of Calgary's department of geology and geophysics plays a key partnership role in the GPDC, providing not only physical space for the Centre but access to its faculty members, and technical and administrative support staff.

AAPG member Rudi Meyer wears two hats in the operation – he's the director of the GPDC and an assistant professor of geology at the University of Calgary.

Meyer explained that the GPDC's Technical Committee and Advisory Board are made up of representatives from all of its sponsor organizations, and include individuals like the university's dean of science.

"The university provides faculty members who have experience in teaching and in setting up courses and programs," Meyer said. "It's amazing in the sense that you have all of these organizations sitting under one umbrella in the GPDC – to us, it's very important to have that industry input."

Don Lawton, professor of geophysics and head of the department of geology

COMMUNICATE

Subtly... securely... powerfully...
In just the batting of an eye,
convey so much well information
in such very small, web-enabled
update files !

CAPTURE
COMMUNICATE
COLLABORATE
COMPLETE

GEO

www.geologix.com

continued on next page

Data Rooms

from page 17

like new wells on production, new seismic, new completions and such, we can add these with a few keystrokes and announce them to the buyers immediately."

The digital data in the online data room are ideal for archive or backup purposes. A CD can be burned to replicate the room on the day it opens and closes, providing a clear record of the room's contents should a future dispute arise over a sale.

One of the "comfort" factors that must be dealt with in the online environment is the issue of security.

"There's a mindset that if it's out there on the Web, it's just gone and you have no control anymore," Jones said. "But because of the technology, there's the

same level of security online as in the physical data room. This includes the documents, the session itself, where the user can go and the actual server."

Besides the advantages of compressed cycle time for the seller, the ability to reach a wider audience of potential buyers on their own turf enables online data rooms to level the playing field. Potential buyers of any size at any locale are exposed to the exact same data. Even the smallest independents now can tap into asset offerings worldwide as easily as the big players, with only a mouse click.

And the role of electronic data rooms extends beyond buying and selling.

When two companies merge, legacy data sets can be put online to facilitate a faster combination of the two entities in terms of managing the assets acquired.

"In that handoff of assets one to the other," Akers said, "it would be advantageous to build online data rooms

for post merger due diligence in the transition time, where you're taking all legacy assets and systems and putting them together.

"Merging these legacy systems into one usually takes several years," he added, "meaning they're running two systems for all their assets. Having a data base in a data room to help manage during the transition would be a real advantage."

The paradigm shift where people are moving from the physical data room to the online environment has reached the midway point, according to Jones. He predicted as bandwidth grows and becomes relatively ubiquitous and inexpensive, it will enable myriad possibilities for the online experience.

Look for changing demographics to impact the future utilization of the online environment in the industry.

"The average age in the industry now is

47 years," Herrmann said. "As this demographic changes, we'll have people coming in who are used to the Internet being part of their lives and who are more comfortable using it.

"We already see people starting to do more true technical analysis online."

In fact, Jones noted that IndigoPool had a couple of projects recently where G&G applications were provided through LiveQuest, an ASP service provider.

To achieve the full benefit of the online potential, Herrmann emphasized it's crucial to look for places where the Internet and its efficiencies play really well.

He cited the example of their now-standard hybrid auction, where bidders on the floor of the auction venue compete simultaneously with those online.

"Another prime example," Herrmann said, "is the electronic data room as a supplement or eventual replacement of the physical data room." □

continued from previous page

and geophysics at the University of Calgary, said that the establishment of the GPDC is consistent with the University's mandate and new academic plan: The university must be responsive to the community and offer post-degree, continuous learning.

"The GPDC brings a lot of integration with industry, and it exposes industry to the geology and geophysics department," said Lawton, also an AAPG member. "Graduate students can sit side-by-side with industry people; there'll be a lot of interaction."

Lawton describes the Centre's three-pronged approach to education – lectures, computers and rocks.

The GPDC will benefit from the use of the university's Gallagher Library of Geology and the Tom Oliver Core Laboratory. Furthermore, the world class Core Research Centre, run by the Alberta Energy and Utilities Board, is just a 10-minute walk from the GPDC.

Calgary-based geologist and AAPG member Tom Moslow, who was involved in taking the GPDC from concept to reality, said that in 1999 the AAPG-Canada Region identified a need in Calgary – due to the high concentration of geoscientists – for a professional development facility that would provide leading edge education at a reasonable cost for practicing geologists, particularly in mid-career.

Such an operation would focus on the integration of cross-disciplinary skills and, in particular, on upgrading computer skills.

The GPDC's aim is to create a made-in-Canada curriculum, tailored to the specific needs of geologists and geophysicists exploring in the Western Canadian Sedimentary Basin.

"A lot of industry courses that come to Calgary don't present the Canadian context," Lawton said. "We want to add a Canadian flavor to the courses."

In addition to offering courses for industry, the GPDC is in discussions with the University on how to develop post-degree training and cross-disciplinary courses that could be credited toward a master's degree, perhaps in reservoir characterization.

In other words, geoscientists could take credit courses while continuing to work in the industry.

Clearly, the Centre – while targeting the training needs of mid-career professionals – also represents a valuable resource to graduate students, and underemployed and unemployed geoscientists.

"The students like it because it gives them contact with the world they hope to join," Meyer said. "Industry people like it because the students are less biased simply because they have not been working in industry. And, sometimes you have to look at things differently." □

Do you ^{really} know who the buyers are

in today's fast changing marketplace?

We do.

Extend your marketing reach by promoting your asset *online* through **AssetExplorer**

- ▶ Leverage our network of over 17,000 qualified buyers & 90,000 monthly Web site visitors.
- ▶ Gain broad, continuous (24x7) exposure for your asset.
- ▶ Match qualified buyers, partners, consultants and operators to your opportunities.
- ▶ Reduce cycle time.

PETROLEUM PLACE
Phone: 303.390.9400
www.petroleumplace.com

GOM Poster Nabs Braunstein Award

A poster given in Houston dealing with the Gulf of Mexico's South Timbalier 26 Field has earned its authors this year's Jules Braunstein Memorial Award, presented for the best poster presentation at an AAPG annual meeting.

The winning poster is "Reservoir Characterization of the South Timbalier 26 Field: The Importance of Shelf Margin Deltas as Reservoirs in the Gulf of Mexico."

The authors are Vitor Abreu, ExxonMobil Upstream Research Co., Houston; Phillip Teas, William Spears and Steve Pierce, all with Unocal Corp., Sugar Land, Texas; Thomas De Brock and Kendall Meyers, both with Energy Partners Ltd.; and Dag Nummedal, Institute for Energy Research, University of Wyoming, Laramie, Wyo.

The authors will receive their prize at the opening session of the 2003 AAPG annual meeting, which will be held May 11-14 in Salt Lake City.

Also announced were the winning presentations for DEG best paper and poster at the annual meeting. The winners are:

☐ DEG Best Paper – Noel Holguin, Pemex E&P, Mexico City, Mexico, for "Pemex's Surface Geochemical Exploration Studies in the Southern Gulf of Mexico."

☐ DEG Best Poster – Martin K. Dubois, Scott W. White and Timothy R. Carr, all with the Kansas Geological Survey, Lawrence, Kan., for "Co-Generation, Ethanol Production and CO₂ Enhanced Oil Recovery: A Model for Environmentally and Economically Sound Linked Energy Systems."

PROFESSIONAL NEWS BRIEFS

Sezgin Aytuna, to independent consultant petroleum geologist, Ankara, Turkey. Previously exploration coordinator, Arco Turkey, Ankara.

David K. Baskin, to senior project geochemist, OilTracers, El Dorado Hills, Calif. Previously staff geochemist, ChevronTexaco, New Orleans.

P. Jeffrey (Jeff) Brown has founded Exploration Analysis, Grapevine, Texas. Previously with Rose & Associates, Austin, Texas.

Don Clement, to exploration consultant, Gulf of Mexico, OGEC,

Houston. Previously exploration manager, Mariner Energy, Houston.

James R. Good, to president, Canadian Forest Oil, Calgary, Canada. Previously vice president-exploration, Canadian Forest Oil, Calgary, Canada.

Ghazi M. Kraishan, to petrophysicist, Santos Ltd., Adelaide, Australia. Previously research fellow, National Center for Petroleum Geology and Geophysics, the University of Adelaide, Adelaide, Australia.

Thomas W. Lenney, to president, Southwestern Water Exploration, Katy, Texas. Previously principal geologist, BP, Houston.

William V. Maloney, to senior vice president-global exploration, Statoil ASA, London, England. Previously vice president-new ventures, Texaco, London, England.

James D. McColgin, to president, USA Lower 48 and Latin America, ConocoPhillips, Houston. Previously president-E&P for Africa, Asia Pacific and Middle East, Conoco, Houston.

Alexander C. McNair, to principal geophysicist, Century Exploration, New Orleans. Previously principal geophysicist, Vastar Resources, Lafayette, La.

Jim Meyerhoff, to business unit manager, Rockies/Mid-Continent, Samedan Oil, Houston. Previously geophysicist, Samedan Oil, Houston.

Matthew J. Pranter, to assistant professor of geological sciences, University of Colorado, Boulder, Colo. Previously senior research geologist, ExxonMobil, Houston.

David Reinkemeyer, to senior geophysicist, Orion Exploration, Houston. Previously exploration consultant, Houston.

Regina N. Tempel, to associate professor, department of geological sciences, University of Nevada, Reno. Previously assistant professor, University of Nevada, Reno.

Brian Toelle, to principal geophysicist, Schlumberger Consulting Services, Houston. Previously senior geoscientist, Holditch-Reservoir Technologies, Houston.

Steve Twartz, to Laminaria and Legendre business manager, Woodside Energy, Perth, Australia. Previously Legendre business manager, Woodside Energy, Perth, Australia.

(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.html)

YOU ASKED FOR MORE POWER AND MORE FEATURES.
AND A USER-FRIENDLY INTERFACE.
THAT RUNS ON YOUR PC.



WE DELIVERED.

The results are in! PowerLog™, Petcom's newest generation of Windows-based software, opens new doors to your petrophysical productivity. The Synthetic Curve Generator leads the list of extensive new capabilities, allowing you to predict curves in wells where they don't exist and to automate bad-data editing. Combined with the intuitive user-friendly features you've come to know, PowerLog brings you unsurpassed flexibility and performance for all your petrophysical needs.

Join the world-wide PowerLog community of more than 175 companies in 44 countries and expand your petrophysical analysis capabilities. Contact us today for a free demo, or to inquire about our other quality products.



PETCOM

(214) 368-2191, Fax: (214) 368-5281, E-mail: petcom@petcominc.com, www.petcominc.com

Data import and export: LIS, LAS, ASCII

Interactive real-time data editing

Environmental Corrections for the major service companies

Nine robust interpretation apps, plus unlimited user-defined models

Multi-well, multi-zone batch processing

EDUCATION CALENDAR

2002 SCHOOLS AND SHORT COURSES

- Reservoir Engineering for Petroleum Geologists
June 17-18, Houston
- Applied Subsurface Mapping
July 8-12, Dallas
- An Overview of Exploration Play Analysis
July 22-24, Dallas
- Well Log Analysis & Formation Evaluation
Aug. 6-9, Austin
- Probability and Statistics for Exploration and Exploitation
Aug. 19-21, Houston
- Characterization of Compartmentalized Reservoirs
Sept. 23-27, Houston
- Structural Styles and Traps
Oct. 5-6, Salt Lake City
(With the SEG annual meeting)
- Terrigenous Clastic Depositional Systems and Sequences – Applications to Reservoir Prediction, Delineation and Characterization
Oct. 21-22, Dallas
- Practical Salt Tectonics
Oct. 29-30, Austin, Texas
(with GCAGS Section meeting)
- Quantification of Risk
Nov. 11-14, Dallas

Modern Deltas
Sept. 9-13
Begins in Baton Rouge, La.
Ends in New Orleans, La.

Tectonics and Sedimentation

E&P in Thrusted Terrains, Practical Applications of Structure and Stratigraphy in the Montana/Alberta Foothills
July 15-20
Begins, ends in Calgary, Canada

Submarine Fan and Canyon Reservoirs, California
Sept. 16-21
Begins, ends in Bakersfield, Calif.

* New AAPG course or field seminar.
** Revision of an AAPG course or field seminar.

2002 FIELD SEMINARS

Carbonates

- Sequence Stratigraphy and Reservoir Distribution in a Modern Carbonate Platform, Bahamas
June 24-29
Begins, ends in Miami, Fla.
- ** Syntectonic Carbonate Sedimentation in Extensional Regimes: Seismic Profile Analyses and Outcrop Analogues from the Atlas Mountains
Sept. 22-28
Begins in Rabat
Ends in Fez, Morocco
- Arid Coastline Depositional Environments
Nov. 3-9
Begins, ends in Abu Dhabi, U.A.E.

Clastics – Ancient

Wave-Dominated Shoreline Deposits, and Sea-Level Change, Book Cliffs, Utah: Depositional Models for Hydrocarbon Exploration
Aug. 19-27
Begins, ends in Moab, Utah

Clastics – Modern

Modern Clastic Depositional Environments
Sept. 3-9
Begins in Columbia, S.C.
Ends in Charleston, S.C.



Ellington & Associates, Inc.

Geological, GeoChemical & Petroleum Engineering Services

- ◆ Paleo Preparation
- ◆ Sample Archiving
- ◆ Mud Logging Quality Control
- ◆ Headspace & Cuttings Gas Analysis (C1 – C6)
- ◆ Total Organic Carbon
- ◆ Custom Well Log Plotting using WinLog ®
- ◆ Log Digitization & Presentation
- ◆ Lithological Descriptions
- ◆ Petrographic Thin Sections
- ◆ Fluid Inclusion Microscopy

1022 Wirt Rd., Suite 312 Houston, TX 77055
Ph: (713) 956-2838 FX: (713) 956-2840
info@ellingtongeologic.com

Technology, Service and Experience Rolled Into One!

INTEGRATED E&P RISK MANAGEMENT

SAAM

SEISMIC AMPLITUDE ANALYSIS MODULE

v2.0

Risk Analysis Software for Seismic Amplitudes

SAAM facilitates the systematic grading of amplitude anomalies, and then yields objective, quantitative output on prospect chance of success and reserves variance that improve the quality of decision making.

"A must for anyone serious about quantitatively evaluating seismic indicators."
-Professor John Castagna, University of Oklahoma

"Use of the SAAM database will significantly improve everyone's ability to categorize prospects."
-Roger Baker, Burlington Resources



512-451-8778

www.roseassoc.com

Rose & Associates

Visual interpretation with other programs.

Visual interpretation with GeoProbe.



Magic Earth's GeoProbe® is the world's leading volume visualization and interpretation software for immersive environments and desktop workstations. With a speed unmatched in the industry, GeoProbe works as fast as you do. Data size is limited only by your system's memory, allowing you to interpret all of your data with precision down to a single seismic sample. In only nine days, two interpreters using GeoProbe evaluated 1500 square miles of 3D seismic and generated 43 drilling targets, including economics.

You have to experience our Visualization Center first-hand to truly appreciate it. The Center combines GeoProbe with an SGI Onyx3800 supercomputer, an immersive 160° curved screen and an ergonomic work area with conferencing capabilities, to create an environment that assures quicker pattern recognition, greater data comprehension, decreased cycle time and more accurate interpretations.

Think of the possibilities.



We make your data a work of art.
832.200.4700 www.magicearth.com

© Copyright 2002 Magic Earth, Inc. All Rights Reserved.

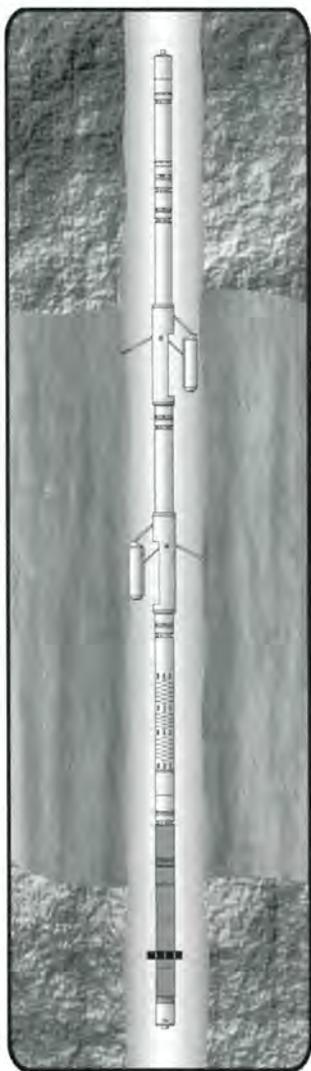


Is now providing
OPEN HOLE LOGGING Services
to **Montana/North Dakota**
and to Mid-Continent Areas in
Oklahoma/Arkansas
Kansas and North Texas

Tucker Wireline delivers:

"One-Run" Stack Technology
Quality Data in customer formats
Efficient, Reliable Service
Web Based delivery of logs

Contact
U.S. Business Development Team
Tucker Wireline Services, U.S.
Houston, Texas
Office: 281-442-9095 ext. 206
Email: infoUSA@TuckerEnergy.com
www.tuckerwireline.com



Quad Stack = 55.1 ft

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.)

For Active Membership

California
Zolnai, Andrew, ESRI Inc., Redlands (R.R. Gries, J.D. Haun, M.R. Grieco)

Colorado
De Gruyter, Phil Clarence, DeGruyter GeoSci. Inc., Parker (M.I. Mora, S. Wu, M.D. Schoemaker); Hall, Richard J., Whitehall Exploration, Golden (Reinstate); Hill, Ronald Jay, U.S. Geological Survey, Denver (M.D. Lewan, P.G. Lillis, I.R. Kaplan); Norberg, Kori Kristen, Ultrapetroleum, Englewood (S.R. Kneller, R.W. McDermott, S.G. Zinke); Schwartz, Jennifer Lynn, Yates Petroleum, Denver (L.M. Kozimko, F.S. Walters, D.J. Murphy); Zahn, Laura Cutright, iReservoir.com, Greenwood Village (C. Kerans, S.W. Tinker, M.D. Sonnenfeld)

Indiana
Gaudin, Robert, Mid-Central Land & Exploration, Evansville (J.P. Fagan Jr., W.R. Schorger, J.R. Caprara)

Louisiana
McMaster, Kevin Thomas, St. Mary Land & Exploration, Shreveport (Reinstate); Rooney, Carol B., Dominion, New Orleans (P.N. Lawless, D.M. Walz, C.J. Corona)

Oklahoma
Goldberg, Judd, Samson Resources, Tulsa (K.A. Brown, P.E. Byrd, J.E. Mathewson); Horn, Michael Allen, Chesapeake Energy, Oklahoma City (Reinstate); Merritt, Michael Louis, State of

Oklahoma, Norman (Reinstate)

South Carolina
Nelson, Jeffrey Carter, independent, Hilton Head (Reinstate)

Texas
Armstrong, Rodney M., consultant, League City (Reinstate); Blasingame, Thomas Alwin, Texas A&M University, College Station (W.B. Ayers Jr., R.R. Berg, E.A. Mancini); Brown, William R., College Station (Reinstate); Christopher, Tammy Suter, ExxonMobil

continued on next page

Certification

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

Petroleum Geologist

Colorado
Kozimko, Leo Michael, Yates Petroleum, Denver (G. Sarwar, J.E. Wellborn, A.C. Weinzapfel)

Texas
Work, James Gregory, consulting geologist, Katy (A. Villamizar, P.L. Versfelt Jr., A. Winkle)

Petroleum Geophysicist

Texas
Jordan, John E., Kerr-McGee, Houston (D.G. Neese, J.A. May, D.M. Jordan); Underwood, John D., Rosetta Energy, Dallas (E.K. David, V.L. Schulz, J.M. Party)

AAPG Education August/September 2002

For course descriptions
visit the AAPG Web site:
<http://www.aapg.org>

Well Log Analysis and Formation Evaluation
Instructors: George B. Asquith; Daniel Krygowski
August 6-9

Probability and Statistics for Exploration and Exploitation
Instructor: Cynthia T. Kalkomey
August 19-21

Wave-Dominated Shoreline Deposits and Sea Level Changes, Book Cliffs, Utah: Depositional Models for Hydrocarbon Exploration
Field Seminar Leader: John K. Balsley
August 19-27

Modern Deltas
Field Seminar Leader: Harry H. Roberts
September 9-13

Submarine Fan and Canyon Reservoirs, California
Field Seminar Leader: Tor H. Nilsen
September 16-21

Syntectonic Carbonate Sedimentation in Extensional Regimes: Seismic Profile Analyses, Outcrop Analogues and Exploration Models from the Atlas Mountain System, Morocco
Instructors: John E. Warme, Mahmoud Zizi
September 22-28



Cubits Gap Subdelta in the modern lobe of the Mississippi River Delta complex. Photo courtesy of Harry H. Roberts

For complete details contact:

AAPG Education Department • P.O. Box 979 • Tulsa, OK 74101-0979 USA
Phone: 918-560-2650 • Fax: 918-560-2678 • E-Mail: educate@AAPG.org
Web site: <http://www.aapg.org>



NEVADA PETROLEUM SOCIETY ANNUAL FIELD TRIP

To Ely, Nevada
August 9 - 11, 2002

Detachment and Attenuation in Eastern Nevada and
its Application to

Petroleum Exploration

Schedule:

Day 1: The Schell Creek Range
Field Trip Leaders: Robert Francis and Charles Walker

Day 2: The White Pine Range
Field Trip Leaders: Robert Francis and Charles Walker

Optional Day 3: The Currant Summit Fault

Cost: \$120

Price includes: 3 dinners, 3 lunches, Guidebook/road log and one complete set of TerraScan maps.

For a complete list of contributors or reservations
contact the guidebook editors:

Bill Ehni: (775) 883-1107

or

Jim Faulds: (775) 784-6691 ext 159

visit The Nevada Petroleum Society web page at
"www.nbmg.unr.edu/nps/"

continued from previous page

Exploration, Houston (A.R. Liesch, R.A. Livieres, D.A. Yurewicz); **Cozzens, James R.**, consultant, Spring (M.W. Rose, E.J. Bucher, M.D. Clearman); **Floyd, James G.**, retired, Houston (D.J. Breaux, B.E. Archinal, W.C. Holland); **Gibbons, Susan A.**, ExxonMobil Exploration, Houston (H.F. Cunningham, L.L. Brooks, C.K. Allen); **Kalinec, Brian Joseph**, Kalinec & Tilley, Houston (Reinstated); **King, Tom J.**, independent, Dallas (D.R. Popkess, W.R. Guffey, R.H. Springer); **McAnulty, John A. Jr.**, independent, Spring (Reinstated); **McCance, Pressly**, Citation Oil & Gas, Houston (Reinstated); **McEachern, Slater E.**, independent, Humble (Reinstated); **Mulcahy, Shawn Thomas**, Fugro-LCT, Houston (J.E. Bain, J.D. Rowe, H.E. Denman); **O'Connor, Robert B. Jr.**, OC Consulting, Ingram (T.A. Bay Jr., J.B. Livingston, F.L. Stricklin Jr.); **Papesh, Kelly**, ExxonMobil, Houston (Reinstated); **Pinkerton, Roger**, Conoco, Houston (Reinstated); **Repke, Brian Howard**, Phillips Petroleum, Odessa (T.A. Cloud, T.R. Moore, D.P. Jordan); **Seyedolali, Abbas**, Westport Technology Center International, Houston (S. Boggs Jr., F.M. Curby, M.J. Hayes); **Sidi, Francisus Hasan**, Jason Geosystems Indonesia, Houston (C.A. Caughey, S.C. Lang, P.M. Lloyd); **Susanto, Dwi Mandhiri**, Schlumberger H-RT, Houston (T.G. Nitka, B.E. Toelle, S.M. Hansen); **Taylor, Rachel**, Trans Africa Tech Network, Pearland (Reinstated); **Theberge, Richard M.**, Kerr McGee, Houston (L.L. Warner III, B.O. Clear, R.L. Lent); **Thomas, David M. III**, Tom Brown Inc., Midland (J.M. Forgotson Jr., H. Liu, T.J. Hunt); **Waite, Lowell Evert**, Pioneer Natural Resources, Irving (J.J. Dravis, W.J. Purves, T.D. Spalding); **Ward, John A.**, Petroleum Geoservices, Houston (Reinstated); **Weber, Mark E.**, Fugro-LCT, Houston (J.E. Bain, J.D. Rowe, K.W. Mohn)

Utah
Player, Gary Farnsworth, consultant, Cedar City (Reinstated)

Wyoming
Russell, Scott L., ChevronTexaco, Evanston (Reinstated); **Worden, Meredith R.**, Worden & Co., Casper (D.F. Cardinal, S.H. Hollis, D.L. Law)

Australia
Anthony, David Parker, Oil Company of Australia, Chapel Hill (K. Suto, G.P. Pass, N. Saunders); **Robins, Wayne Howard**, Origin Energy Resource, Brisbane (D.C. Lowry, G.P. Pass, K. Suto)

Brazil
Abraham, Dirceu, Petrobras, Rio de Janeiro (M.R. Mello, N.C. Azambuja Filho, R. Mosmann)

Canada
Fogarassy, Josef A.S., Clark, Wilson, Vancouver (Reinstated); **Martel, Tom**, Corridor Resources, Halifax (P.K. Mukhopadhyay, K.F. Hansen, G.D. Wach)

England
Michaels, Sathya G.J., consultant, Kingston Upon Thames (Reinstated)

Ghana
Botchway, Isaac Annan, Ghana National Petroleum Corp., Tema (K.A. Nibbelink, G.E. Stachura, A.D. Scardina)

India
Seal, Prasanta, Oil & Natural Gas Corp., Dehra Dun (B.K. Kar, K.V. Ajay, P. Mohapatra); **Srinivas, Mokashi S.**, Oil & Natural Gas Corp., Mumbai (K.S. Bhushan, R.K. Upadhyay, V.C.S. Sandilya)

Netherlands
Uitentuis, Evert, independent, Wittelte (Reinstated)

Nigeria
Adejumo, Olufemi, Famfa Oil, Lagos (O.T. Odusote, B.A. Koledoye, O.E. Adesanya); **Adesanya, Abiodun Olufemi**, Geostar Solutions, Lagos (Reinstated); **Ajisafe, Isaac Kehinde**, Famfa Oil, Lagos (O.S. Adegoke, A.O. Ekun, O.T. Odusote); **Imeokparia, Gabriel Ebo**, University of Benin, Benin City (A.S. Odusina, A. Adesida, N. Omorodion); **Ogedengbe, Bamidele A.**, Department of Petroleum Resources, Lagos (A. Adesida, C.O. Coker, N. Omorodion)

Norway
Laursen, Inger, Statoil, Harstad (Reinstated); **Ross, Jeffrey Gordon**, ACECA Ltd., Wimbledon (P.R. Sorensen, M.D. Caulfield, N.A. Harbury)

Republic of Armenia
Harutyunyan, Albert, St. Engr University of Armenia, Azatavan (W.P. Grun, R.D. Fritz, A.Y. Aghabalyan)

Romania
Tibuleac, Paul, University Al I Cuza, Iasi (I.I. Bucur, O.N. Dragastan, D. Ciulavu)

Russia
Gildeeva, Irina M., VNIGRI, St. Petersburg (N. Schneidermann, W.P. Grun, V.K. Shimansky)

Trinidad & Tobago
Roberts, Carolyn Lidia, Ministry of Energy, Port of Spain (K.M. Persad, R.R. Gries, S.R. Wharton)

Vietnam
Tan, Mai Thanh, Hanoi University Mining & Geology, Hanoi (P.M. Lloyd, P.T. Dien, L.D. Phan)

Wales
Allen, Stephen Geoffrey, Data by Design, Colwyn (Reinstated) □

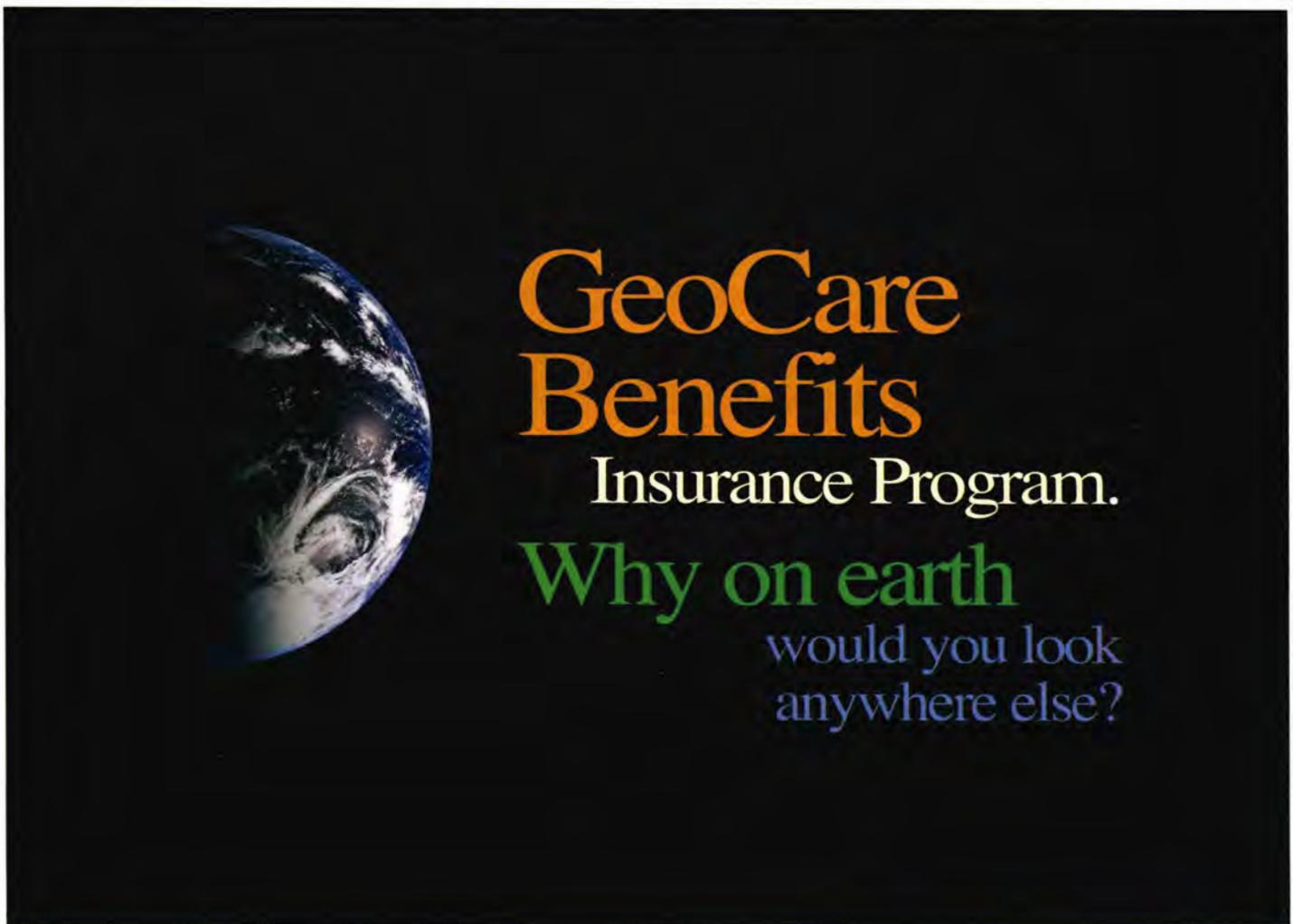


Target
Exploration Consultants

MENA 2002 Oil & Gas Conference
(What Now?)
The 3rd Middle East and North Africa Oil and Gas Conference

19 & 20 September 2002
Imperial College, 18 Queen's Gate, London SW7, UK

For registration, programme and other information contact
T/E: +44 (207) 571 2240 Email: MiTarget@aol.com
www.TargetExploration.freeserve.co.uk



GeoCare Benefits Insurance Program.

Why on earth would you look anywhere else?

You've got the whole world in your hands. So naturally, you'll choose GeoCare Benefits to help your family keep their world turning. We make available plans that are out of this world: life,* medical,* and disability insurance* plus several supplemental plans to complete your family's insurance protection.

No matter which plan you choose, you'll receive outstanding quality, value and service. GeoCare Benefits Plans are underwritten by some of America's most respected, most secure insurance companies. Plus the group buying power of thousands of AAPG members and our cooperation with AAPL, GSW, SEG, SEPM and SPE help keep our rates affordable.

What in the world are you waiting for? Call 1-800-337-3140 today for more information including eligibility and renewal provisions, exclusions, limitations, and rates and your FREE GeoCare Benefits Insurance Kit or visit our website at www.geocarebenefits.com.



GeoCare Benefits Insurance Program • P.O. Box 1246, Carpinteria, CA 93014-1246
www.geocarebenefits.com • e-mail: geocarebenefits@agia.com • 1-800-337-3140

*Underwritten by New York Life Insurance Co., 51 Madison Ave., New York, NY 10010



FUGRO-LCT
THE WORLD'S LEADER IN GRAVITY & MAGNETICS

- Marine & Airborne Surveys
- Multi-Client Data
- Interpretation Services
- Seismic Integration Software
- Data Processing
- Database Management

www.lct.com

READERS' FORUM**Bad Manners, Bad Business**

I enjoyed reading the article by Peter R. Rose (May EXPLORER), and agree that our membership needs to be reminded that how we address the little things in our professional ethics implies to others how we think about the larger issues.

Last fall I was fortunate enough to be program chairman for a regional geologic conference and had a bit of first hand experience with the blatant commercialism that Mr. Rose writes about. A handful of the talks – and I had personally solicited virtually the entire program – had just a little bit more of the “infomercial” flavor than I would have preferred. On the other hand, the “perpetrators” were all good, honest

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.

people that I respect.

So, perhaps a gentle reminder is in order. At a time when digital cameras, scanners, computers, etc. make it extremely easy to generate slides using others work to help demonstrate our own work, we need to be careful to remember that we are all standing on each others shoulders in our business.

Question: In satisfying the requirement that use of previous work be acknowledged in a slide presentation, is it okay to simply make a verbal acknowledgment during the course of

your presentation that, for example, the diagram shown was modified from such and such, or is it necessary that the acknowledgement be made in print directly on the slide, or both?

Or in the case where material is used that was itself acknowledged as being modified from a previous author, which person should be recognized?

Connie Hawkins
Denver

Ethics

At the recent AAPG convention in

Houston, Robbie Gries delivered an appeal to the membership to be completely honest and ethical in their practice of their science and profession. It was the strongest appeal for ethical conduct I have ever heard from any AAPG podium.

In her “President's Column” in the April EXPLORER she courageously presses the same subject, but also points out the practical difficulties of enforcing the Code of Ethics and calls attention to AAPG's wimpy track record of avoidance of litigation.

She suggests that if AAPG is unwilling to enforce its Code of Ethics perhaps it should scrap it.

I think not! AAPG should never scrap its Code of Ethics. Litigation or no litigation, the Code serves as the official published statement of AAPG on ethical conduct. It stands as a constant reminder to our members to simply do the right thing. Were an anonymous poll taken I'd wager many members would acknowledge that the Code has given them cause to pause, has pricked their conscience, and deterred them from engaging in questionable practices.

Great religions do not pull down their commandments simply because they are not consistently obeyed ... nor should the American Association of Petroleum Geologists do so.

Robey H. Clark
Amarillo, Texas

I applaud Robbie Gries for raising the issues of commitment to the Code of Ethics and ethics enforcement (April President's Column).

As a past-president of the Division of Professional Affairs I know from experience and observation that the DPA has been at the forefront in promoting ethical conduct and in pushing the enforcement issue for years. By its very nature certification is promoting professional ethical conduct. DPA's course was set by the originating purposes, and made clear in the Bylaws for anyone to read.

During my tenure as DPA president an individual was expelled from AAPG membership for fraud-related charges. Though there was a protracted discussion within AAPG on some legal definitions, the issue was settled quietly without problems. Things will not always work this smoothly. There are levels of potential reprimand, which will involve something less than loss of membership.

Also, because so much of what we do is based on interpretation of data, it is easy for ethical lines to be blurred, especially by public perception. Robbie has pointed to other facets of the issue. But I am confident that if we make the effort there is a way through this thicket and that processes can be developed, that are fair and just for all involved – one where fear of reprisal or litigation are reduced.

One very important point must be made. Ethical problems go beyond our profession. It is an industry-wide issue. That alone should motivate the association to take the lead in commitment and enforcement of professional ethics. We owe it to ourselves.

Robert T. Sellars Jr.
Denver

We need the EEC. I'm not talking about the European Economic Community. I'm talking about Ethics, Etiquette and Courtesy.

Shortly after going to work in 1958 for

continued on next page

AAPG ANNOUNCES

A new Studies in Geology publication: **Sinai Peninsula Rift System Mapping**

Compiled by
Dr. Adel Ramadan Moustafa
Ain Shaims University, Cairo Egypt

Available on CD-ROM October, 2002

Included will be:

Nine maps of the rift system and key cross sections in the Sinai Peninsula

- **maps document the distribution of sedimentary rocks and influence of rifting on reservoir and seal lithology segmentation based on Dr. Moustafa's years of field research.**
- **featured in field trips associated with the Cairo 2002 conference, the Sinai is a natural laboratory.**



(publication made possible by generous funding from BP)

continued from previous page

Shell Oil in Tyler, Texas, I was told to always return calls, be helpful on data exchanges, support your local organizations, try to keep a submittal not more than five work days and remember that dedication and communication is the cement that brings strength to our company and our industry.

I have grown up practicing and believing in these tenants. It is the stuff personal credibility is made of.

When you charge your profession with fault there are always those who disclaim and rebut. Nevertheless, I charge that AAPG members and local societies, by a lack of emphasis toward its younger members, have allowed (along with company management) a complete deterioration of the EEC fabric within our profession.

Some personal examples include:

- ✓ After submitting a prospect, their geologist recommends I show it to another company when his turned it down. His recommended company buys my submittal. The geologist asks me for \$5,000 for his referral. He was denied.

- ✓ A major independent reviews a submittal, buys the unleased adjoining acreage, then hard trades the originator.

- ✓ Numerous farmout requests sent with no response ever received.

- ✓ Prospect files sent on request and never returned or turned down. Necessary to phone and request an answer and return of file.

- ✓ Following a positive response by phone to show a prospect including seismic, told the company isn't interested in the area anymore after reviewing the seismic. A 200-mile trip.

- ✓ Submit prospect file and seismic data for review. Three weeks later I was requested to set up a full seismic review in farmout company's office. This done, geophysicist never shows up. Prospect never rejected. Have to go retrieve file. Farmout company irritated.

- ✓ Asked to leave prospect file for review. Phone 10 days later, has not been looked at.

- ✓ Have been cautioned more than ever before about companies and individuals who cannot be trusted to honor ownership.

- ✓ 1981-1982. Newspaper and major institutional research articles by security analysis discussing in detail the economic value of discoveries or new trends. The articles are misleading, misrepresentative and lack substantiation or fact. Such as, 60 BCF for each gas well to be drilled. The companies involved have an obligation to clarify such headline seeking promotional remarks. Some of the wells mentioned have made 7 BCF to date.

In summary, there is a serious lack of EEC within our professional community, and I would like to see something done about it through AAPG and the top management of major companies.

E. Gerald Rolf
San Antonio

Robbie Gries' April President's Column poses the questions to AAPG members, in essence: Should AAPG enforce its Code of Ethics, or scrap it?

This is not an "either-or" issue. We cannot effectively go about our business of finding oil and gas unless we conduct our business on a solid foundation of professional ethics. One individual's unscrupulous business practice inevitably damages the businesses of others - this is precisely what the Enron fiasco demonstrates. Technical expertise and business savvy are worthless if ethics have gone awry.

Enron and Arthur Andersen were idolized for their technical and business brilliance and destroyed by their profound lack of ethics.

It took only a handful of people to bring down two entire organizations; it takes only a handful of people, or perhaps even one person, to save an organization by maintaining ethical standards.

When I first became an AAPG member one of the most significant and inspiring moments was when I signed the Code of Ethics and felt the dignity of being associated with a worldwide organization of true professionals. Knowing that each and every other member had signed that Code of Ethics provided the most incredible sense of confidence and security with fellow AAPG colleagues.

We should not and cannot "scrap" our Code of Ethics or fail to enforce it if we want AAPG to continue as a strong, viable, respected professional organization. Oil and gas isn't the only thing, and ethics is everything.

Virginia McNamee Pendleton
Tulsa

www.OilandGasKnowledge.com

Your Professional Pathway to Knowledge and Performance

Online July 1 - Preview Now

Have you ever thought about giving EXPLORER as a gift to your —

Investor?

Landman?

Accountant?

Lawyer?

Banker?

Secretary?

Engineer?

Potential Geology Major?

Give them a gift subscription. It will be the best public relations gift you ever gave.

Contact AAPG at (918) 584-2555 for more information.

EXPLORATION SERVICES	RESERVOIR SERVICES	PRODUCTION	MULTI-CLIENT 3D DATA
----------------------	--------------------	------------	----------------------

PGS Geophysical Technology Now

MC3D

From Prospect To Production

PGS combines local geological knowledge and world-class geophysical technology to produce durable MC3D data: fit for exploration, field development and production.

Choose from over 250,000 km² of accurate, affordable and readily accessible multi-client 3D, covering the world's most prolific hydrocarbon basins.

ASIA - 56,000KM² : WEST AFRICA - 33,000KM² : NW EUROPE - 60,000KM² : GOM - 81,500KM² : BRAZIL - 32,000KM²

PGS GEOPHYSICAL

Houston Tel: 281-589-6725 Fax: 281-589-6558	London Tel: 44-1932-260001 Fax: 44-1932-266465	Oslo Tel: 47-67-52-6400 Fax: 47-67-52-6464	Singapore Tel: 65-6735-6411 Fax: 65-6735-6413
--	---	---	--



OILFIELD TECHNOLOGY SOLUTIONS

www.pgs.com/technologynow

WINLOG® TVD

MD logs to TVD logs
at the click of a mouse...

Series: quartzose, colourless translucent, rarely
fine to very coarse, subangular to rounded, poorly so
generally moderate yellow fluorescence, milky yellow
ence.

www.hrh.ltd.uk

DEG

from page 46

With the creation of the Hanson Memorial Environmental Grant, we have made a permanent commitment to keep petroleum environmental issues at the forefront of the GIA program. This sends a clear signal to the work force of the future that we believe environmental concerns to be a routine part of doing business in today's world, and that we are serious about practicing this belief.

Consider the matter of BTEX (benzene, toluene, ethylbenzene and xylenes) in aquifers – a major and recurring environmental problem in industrialized countries. These compounds are routinely produced by refineries and petrochemical plants worldwide, and have chemical characteristics that make them troublesome in the natural environment. They:

- ✓ Are soluble in fresh water.
- ✓ Readily diffuse from where they are introduced to adjacent areas.
- ✓ Can potentially impact a large aquifer volume.

Technologies like pump-and-treat are often deployed to remediate affected aquifers, but these may be expensive and require long-term operational commitments. Thus a need exists for an inexpensive, less intrusive and more effective means to remediate aquifers that have been impacted by BTEX.

Work being carried out by the first-ever recipient of the Hanson Memorial Environmental Grant (HMEG) may help provide a solution to this problem.

* * *

The award was made through last year's GIA Program to Jackson M. Spain, a graduate student in the Department of Geological Sciences at Virginia Tech. The science being done by Jackson is high-caliber, fills a crucial need and will be widely deployed upon successful completion.

Jackson is conducting a study to optimize a technology known as *in-situ*, or intrinsic bioremediation. It is a method that relies on naturally occurring microbes to degrade and consume organic contaminants, and has great potential as a remediation tool.



Jackson Spain

A key objective of his work is to better understand the fluid-rock controls that influence microbial degradation of BTEX dissolved in water. The research may indicate whether subtle geochemical differences in aquifer characteristics allow degradation to occur. For example, the distribution of iron-oxide rich materials may exert a major control on whether microbes are able to consume BTEX or not.

Such an investigation is a bit removed from the "source-reservoir-seal" type studies routinely done in our industry, but it is a good example of how our profession adapts to address changing needs.

It also illustrates that geology is a multifaceted field. We routinely work with the rock-water-atmospheric system, and thus we are among the best-suited disciplines to tackle the environmental issues associated with such systems. Further, it helps ensure that we will remain at the forefront of environmental stewardship.

I think Bruno Hanson recognized much of this before we did. Our commitment to environmental awareness is a major part of the legacy he left our organization, our profession, and our industry. Our division is only 10 years into this legacy, but we will not stop.

Thanks, Bruno. □

GIP

from page 27

geology, geography and sedimentology of the area, she presented her findings to a divided audience at public meetings.

Working collaboratively with the Massachusetts State Coastal Zone Management and the town of Wellfleet (population 2,493), Argow tried to find the delicate balance between meeting the needs of the environment and the needs of diverse stakeholders, including landowners, shellfishermen, boaters, local residents and businessmen.

The park provided Argow with housing, the town with office space and the AWG with funding for the project.

"It was very important to my credibility with the general public of Wellfleet that I had third party funding," she said.

"Green equals healthy" was the first misconception that Argow had to dispel amongst the general public of Wellfleet. Disturbed land, according to Argow, is frequently colonized by invasive plant species. During her research, Argow

documented the presence of invasive woody shrubs living at elevations below mean high tide that were not salt tolerant.

"My primary focus," she said, "was to explain this scientific data in clear English so that everyone could understand. As an outsider, I made it clear that this estuary ecosystem was not healthy."

Over a period of 90 years, the dike prevented the natural process of saltwater exchange or tidal flushing in the Herring River. Without the pressure of tidal waters, the local aquifer increased its discharge into the marsh, causing the water table to drop from mean high tide level to mean sea level. Large areas of the salt water marsh became completely drained. Dried out salt marsh peat contains a strong concentration source of pyrite: aerial exposure caused oxidation of the pyrite, releasing sulfur into the water. The water acidified, with pH values measuring as low as 3.5. Summer fish kills were common.

What lessons did Argow take away from this GIP project?

"In some sense, I got a really good appreciation of how difficult it is to be an idealist, and how important it is to be a scientist," Argow said. "I have got to teach my students how to separate facts from interpretation." □

3-D images so real you'll be amazed!

The cutting edge... Volume Pro enabled, real-time interactive 3-D visualization capabilities and the power of Intel® Xeon™ Processors. RCL Systems will configure the latest technology into your Geophysical Workstation to keep you in the pay zone.

Call us at 1-800-758-1771 or 281-240-2777
or visit us on the web at www.rcl.com

**RCL
SYSTEMS**

Intel and Intel Inside Logo are registered trademarks of Intel Corporation.

INMEMORY

Anderson, Jerome Ernest, 65
Calgary, Canada, April 3, 2002
Batten, William H. Jr., 82
Tulsa, January 2002
Beckman, Murlind William, 69
Lakeway, Texas, March 14, 2002
Carter, Joseph O., 73
Houston, Aug. 27, 2001
Chequer, Michael Robert, 61
Houston, March 3, 2002
Dean, David P., 103
Forth Worth, Dec. 26, 2001
Dorsey, Russell A. Jr. (EM '58)
Inverness, Fla.
Estes, Wayne Shelton, 73
Reno, Nev., March 30, 2002
Fenstermaker, Charles D., 79
Oklahoma City, May 2001

Greene, Malcolm B. (EM '53)
Newbury Park, Calif.
Henderson, Virginia W., 42
Corpus Christi, Texas
July 22, 2001
Herrington, Louise H., 84
Jennings, La., March 6, 2002
Huffstetler, Joseph R., 77
Tulsa, March 25, 2002
Hultman, John Richard (EM '52)
Roswell, N.M.
Karvellas, Paul H., 61
Colorado Springs, Colo.
Nov. 30, 2000
Langrehr, Jerry A. (AC '73)
Wichita, Kan.
Lee, Albert Edgar Jr., 73
Midland, Texas, Feb. 22, 2002

Miles, Manderson Lehr, (EM'50)
Oklahoma City
Rickards, Leonard Myron, 73
Ocala, Fla., Aug. 5, 2001
Seeligson, Arthur A. Jr., (AS '45)
San Antonio
Severson, George A., 98
Tulsa, April 12, 2002
Short, William Taylor (EM'49)
Oklahoma City
Simoes, Ivan De Araujo (AC'81)
Rio de Janeiro, Brazil
Smith, Lyle Wyman, 90
Ventura, Calif., Jan. 24, 2002
Stanton, Ronald W., 50
Vienna, Va., September 2001
Towns, Danny Joe (AC '76)
Edmond, Okla.

Vuchev, Vassil Todorov (AC '81)
Sofia, Bulgaria
Wing, Richard Sherman, 73
The Woodlands, Texas
August 2001

(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.)

CLASSIFIED ADS

POSITION AVAILABLE

Job Opportunities

SENIOR RESEARCH GEOSCIENTISTS

C & C Reservoirs invites applications for the positions of Senior Research Geoscientist. Ideal candidates should have: 1) a PhD in geology, 2) at least 5 years experience in exploration and/or field development, 3) strong commitment to research excellence and 4) sound knowledge of a broad range of geological and reservoir-engineering principles and practices. Excellent written skills in English are essential. Applicants with an industrially oriented research experience in the field of stratigraphy, sedimentology and/or reservoir geology are especially welcome. The primary job scope is to conduct field studies and deliver the results in comprehensive reports. We offer a competitive compensation package to the successful candidates. If your qualification and experience meet our requirements and you are willing to take the challenge, please submit a letter of application and a detailed resume to info@ccreservoirs.com.

BUSINESS OPPORTUNITY

Louis J. Mazzullo, Petroleum Geological Consultant
Western U.S. basins.
Visit www.lmazzullo.com or call (505) 890-0080.

WANTED

Used metal square tube cabinets - 15"X15" X 48" to 60" deep, 36 slot
Lateral cabinets for MJ Microfiche, 8-10 drawer
Contact Lori at Ensign Oil & Gas (303) 382-6777
lgillman@ensignoil.com

FOR SALE

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

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

DRILLERS' LOGS - For all counties in Texas, 1917 to 1965. - Buy a few or all 400,000. (713) 781-4525 or jdschulz@flash.net

For sale - Best offer for the following: M-J microfiche logs of Western Oklahoma through 1985. Hard copy scout cards through 1985; and approximately 189 4' shelves of hard copy logs of Western Oklahoma and Southern Louisiana. Includes shelving units for all microfiche, scout cards and hard copy logs. Also, large geologic desk work unit.
Daniel Woods
(918) 587-1165

CLASSIFIED ADS

You can reach about 30,000 petroleum geologists at the lowest per-reader cost in the world with a classified ad in the EXPLORER. Ads are at the rate of \$2.10 per word, minimum charge of \$42. And, for an additional \$50, your ad can appear on the **classified section on the AAPG Web site**. Your ad can reach more people than ever before. Just write out your ad and send it to us. We will call you with the word count and cost. You can then arrange prepayment. Ads received by the first of the month will appear in the subsequent edition. For further information or assistance, call Brenda Merideth at (918) 560-2647 or (800) 288-7636 (Canada and USA).

**ASSISTANT PROFESSOR
APPLIED SEDIMENTOLOGY/STRATIGRAPHY
DEPARTMENT OF EARTH & OCEAN SCIENCES
UNIVERSITY OF BRITISH COLUMBIA**

The Department of Earth & Ocean Sciences, University of British Columbia, invites applications for a tenure-track faculty position in the area of Sedimentology/Stratigraphy. Appointment will be at the Assistant Professor level except in the case of a woman of exceptional qualifications who may be appointed at a higher rank. The position will be available as early as January 1, 2003 but is subject to final budgetary approval.

Candidates from all relevant fields of Science and Engineering are encouraged to apply. We seek an exceptional scientist whose research enhances and extends our existing strengths. In particular, we seek candidates whose research is applicable to the field of exploration and exploitation of fossil fuels or environmentology of fossil fuel extraction or utilization. A Ph.D. is required by the commencement date. Teaching at the undergraduate and graduate level is expected.

The University of British Columbia hires on the basis of merit and is committed to employment equity. We encourage all qualified persons to apply; however, Canadians and permanent residents of Canada will be given priority. For more information about the department and this position, visit our web site at www.eos.ubc.ca.

Applicants should send their curriculum vitae, a statement of research and teaching interests, and the names and contact information (including e-mail addresses) of three referees to:

Dr. Paul Smith
Head, Department of Earth & Ocean Sciences
The University of British Columbia
6339 Stores Road
Vancouver, British Columbia V6T 1Z4
Applications will be considered until October 11, 2002.



"I read Oil IT Journal for a quick, concise look at what's happening in the upstream IT world as well as the E&P market in general."
John Gibson, President, Halliburton Energy Services.

"Oil IT Journal features an interesting mix of technical discussion, explanation of new technologies and their significance, and petroleum industry gossip and hype."
Bill Wally, Senior Research Scientist, ChevronTexaco.

"Oil IT Journal provides a great overview of the current information technology activities in the upstream industry. We particularly like the straightforward reporting approach on vendor activities and initiatives."
Brad Kaufman, Manager Applications, Kerr-McGee.

Oil Information Technology Journal
IT for geoscientists
geoscience for technologists
info@oilit.com

www.oilit.com

DIRECTOR'S CORNER

24 Years of Memories, Achievements

(Editor's note: As reported on page 6, Don O'Nesky is stepping down this month from his positions at AAPG. It seemed appropriate, then, that we give him this opportunity to make some final remarks about his long and extraordinarily successful career at AAPG.)

By DON O'NESKY

As I prepare to "fade away" as an AAPG employee I have been reflecting on the past 24 years. It seems only last week when Executive Director Fred Dix and President and Powers Medalist Dan Busch interviewed me in Fred's office, but in reality it was 1978.

During the years that followed Mary and I have made many friends with members and their families throughout AAPG that we will never forget.

When I arrived on the job my first day, I found the workers from the membership department had decorated my office with an empty champagne bottle on the floor, empty aspirin bottle on the desk, reams of paper scattered throughout the office and prints hanging on the walls at an angle. This welcome immediately "broke the ice" and made me realize the AAPG employees had a good sense of humor and could get the job done, even at my expense.

Also on that first day Jim Hartman, the membership chairman, flew in to meet with me. Again, I was impressed with Jim's dedication in a volunteer position. Over the years I have known many committee chairmen and members with such dedication and the willingness to spend their time and their own money for the benefit of AAPG and the AAPG Foundation.

The members who put more into the organization than they take out create the strength of any volunteer organization. That is, those people who contribute many hours of their valuable time and their money without fanfare to make an organization the very best. And yes, AAPG has many members who have done this for years. We owe all of them a great deal of gratitude.

AAPG Executive Director Rick Fritz, on Don O'Nesky:

Don is one of those people you can never replace. In addition to his people skills, Don is the consummate problem solver. Although not a geologist, he understands the profession – and both members and employees knew that they could call Don and get things done.

Don will be sorely missed, but he has a trait similar to most geologists – he would rather wear out than rust out. I have a feeling the "chad counters" in Florida will soon know that Don has arrived on the political scene.

* * *

It did not take long for me to understand the cyclical nature of the oil and gas business. When I arrived the membership was 20,696, and we peaked at 44,412 in May 1985. We dropped to a low of 29,013 in June 2000 and are back to 31,100.

All of these losses impacted AAPG but more important, each one was a lost job and family hardships. Many of them were our friends who were really hurt in the mid-1980s.

Another sign of the times was our annual conventions.

My first AAPG convention was the 1979 meeting in Houston, which had 8,083 attendees. This was the start of conventions that attracted the larger number of attendees. The largest convention prior to that was New Orleans in 1976 with 5,649.

Then we had the "Convention of All Conventions," held in San Francisco in 1981 with 12,152 attendees. This meeting overwhelmed the staff and attendees alike. Sessions were overcrowded, cocktail parties were overflowing (no pun intended) and standing room only was the norm on the buses.

The question at the time was how to handle meetings of this size and larger in the future – but then 1986 brought us back to reality with 3,841 attendees in Atlanta.

But like the industry, we have rebounded – to an average meeting attendance figure in the mid-6,000s, with Houston 2002 at 7,665.

As the oil prices fluctuated, so did the share prices and income in the companies, and AAPG income was going

through the same process. Our total annual income was \$2.5 million in 1978, and we had a gradual increase to \$8.9 million in 1985 – but by 1987 with the industry crash it was down to \$6.1 million.

Since then it has gradually grown to over \$11 million per year, reflecting, again, the same ups and downs of the industry.

* * *

There have been many important decisions by the AAPG leadership over the years, but two of the most critical were the establishment of a reserve fund, and Mike Halbouty's vision to create the AAPG Foundation.

In the mid-1980s the Association would have been bankrupt if it had not been for the reserve fund and the AAPG Foundation.

In June 1985 our reserve was at \$2.6 million, and over the next 18 months we had to withdraw \$1.8 million just to keep the Association afloat. At the same time the AAPG Foundation Trustees were picking up more activities than could be funded and remain in compliance with the tax regulations.

Most members do not realize the importance the AAPG Foundation plays in geoscience and the petroleum industry. Its Trustees are contributing approximately \$1 million per year to worthwhile projects, including:

- ✓ The Distinguished Lecture program.
- ✓ The VGP.
- ✓ K-12 activities.
- ✓ Graduate Grants-in-Aid and undergraduate grants.
- ✓ Book projects like the Treatise of Petroleum Geology.
- ✓ Map projects like the Tectonic Map

of North America.

✓ The "Special Lecture" at the annual meeting.

✓ The Foundation Library.

✓ Support to the AAPG BULLETIN.

Without the Foundation funding, many of these projects would be scaled back, or perhaps not happen at all.

It is in your interest to contribute to the AAPG Foundation, and you should encourage your company or company foundation to contribute. A special fund has been set up to cover overhead, thus each dollar contributed to the AAPG Foundation goes to the project for which it is intended.

* * *

There was another critical decision made by the AAPG and the AAPG Foundation leadership, and that was the hiring of Rick Fritz as executive director. Rick is doing a great job of leading the Association in a new and positive direction.

In my estimation AAPG is in the hands of a most capable leader that is putting together an equally effective staff needed to move the Association forward in a more complex and competitive century.

I'm proud to have known and worked with them and wish each of them success as the Association and Foundation moves forward.

* * *

In closing, I would like to thank all of the AAPG Foundation Trustees, Trustee Associates, other members and AAPG employees who have supported and helped Mary and me over the past 24 years.

I would especially like to thank Fred and Jean Dix for not only their support, but more important, their guidance and advice over a quarter century.

And to all of you, your friendship has given us a lifetime of memories – and we look forward to seeing you at future AAPG conventions. □

'Founding Father's' Impact Felt

Bruno's DEG Legacy Lives On

By WILLIAM E. HARRISON
DEG President

This year, the AAPG Division of Environmental Geosciences (DEG) celebrates its 10-year anniversary – the AAPG House of Delegates voted to establish DEG at the 1992 annual meeting held in Calgary. Prior to this action, all environmental issues for AAPG were the responsibilities of the Hydrology and Waste Management and Environmental Geology committees.

As a way to recognize our 10th year as a division, it is appropriate to not only reflect on our beginnings but also mention some recent developments that invoke a certain confidence for the future.

* * *

No one was more active in the creation of the DEG than our "founding father," the late Bernold M. "Bruno" Hanson.

An AAPG past-president and Sidney Powers Memorial Award winner from

Midland, Texas, Bruno was DEG's first president and served in that role for two years. He was awarded Honorary Membership in the division in 1997 and received our highest tribute, the DEG President's Award, in 1998.

Environmental stewardship, as well as environmental leadership, from those of us in the oil and gas industry was very important to Bruno. He conscientiously worked to ensure that environmental issues and responsible environmental practices were both recognized and integrated into petroleum geology and our industry activities. It was his foresight and leadership that led to environmental issues and concerns of the membership transitioning from committee-level status to a division of the Association.

Upon Bruno's passing in April 2000, the DEG wanted to create a vehicle to perpetually honor and recognize his leadership role in our division and our Association. The DEG leadership worked with the AAPG Foundation to establish the

Bernold M. "Bruno" Hanson Memorial Environmental Grant. This grant, with an endowment currently valued at over \$33,000, is now a part of the Foundation's annual Grants-in-Aid Program that supports geology graduate students.

The major stipulation for this grant requires that it be used for the "study of specific environmental issues related to exploration and production of petroleum and energy minerals, or application of technologies developed in the petroleum or energy minerals industries to environmental problems."

* * *



Hanson



I have served on the AAPG Foundation Grants-in-Aid (GIA) Committee for the last several years, and this has allowed me to keep up with current thesis and dissertation research activities. Many of the GIA applications that have come across my desk have had interesting environmental components although, on-balance, they have not competed favorably with the more traditional industrially oriented proposals.

See DEG, page 44



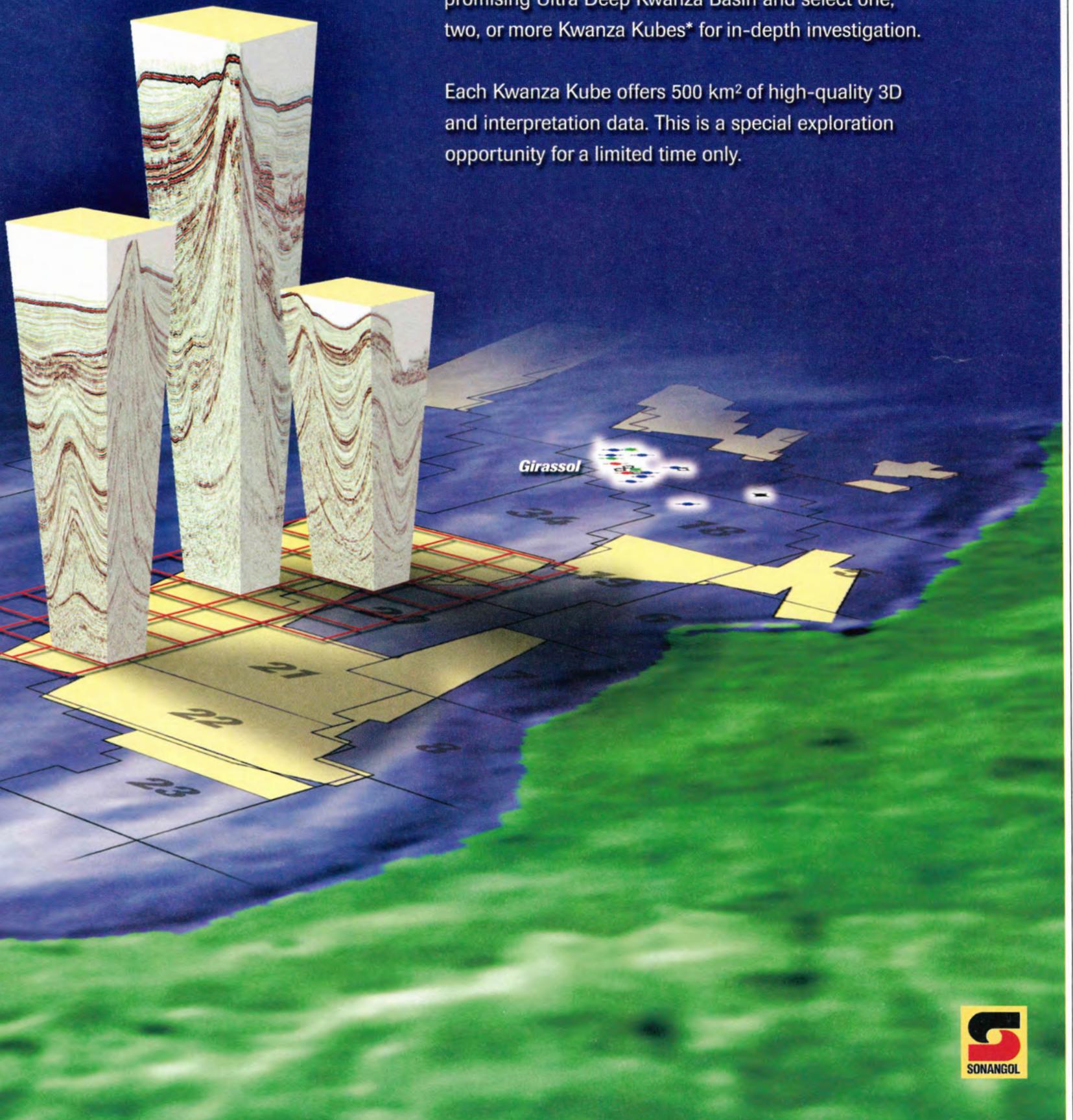
Kwanza Kubes

A unique exploration opportunity

Angola - Ultra Deep Kwanza Basin

Review WesternGeco exploration data over the highly promising Ultra Deep Kwanza Basin and select one, two, or more Kwanza Kubes* for in-depth investigation.

Each Kwanza Kube offers 500 km² of high-quality 3D and interpretation data. This is a special exploration opportunity for a limited time only.



*Mark of WesternGeco

For further information please contact WesternGeco Multiclient Services

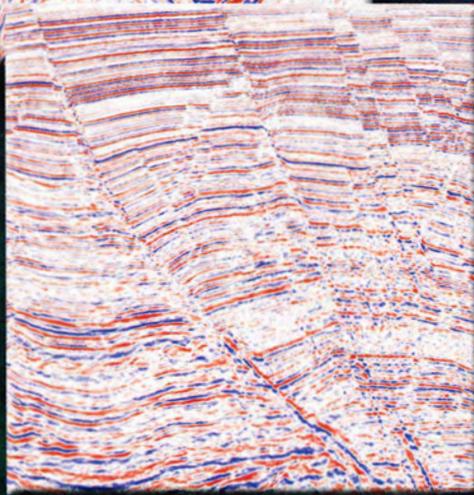
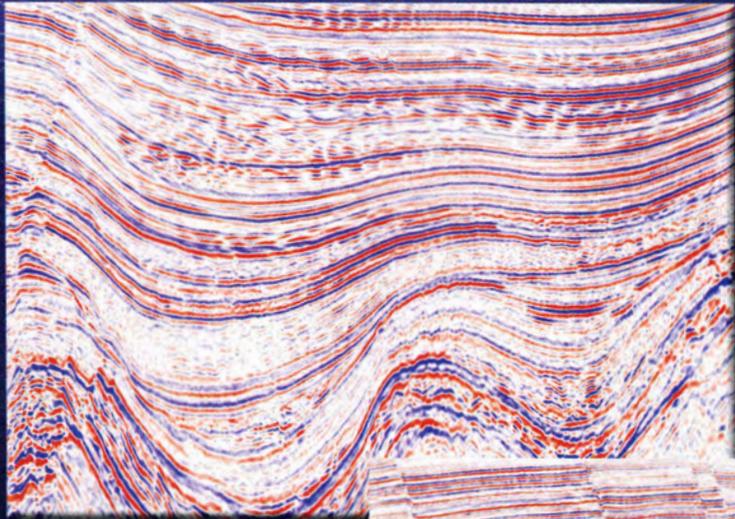
Houston: +1 713 689 6812 London: +44 1293 556533
Email: multiclient@westerngeco.com
www.westerngeco.com A Schlumberger / Baker Hughes company





Western Gulf of Mexico

Can you afford to compromise on quality?



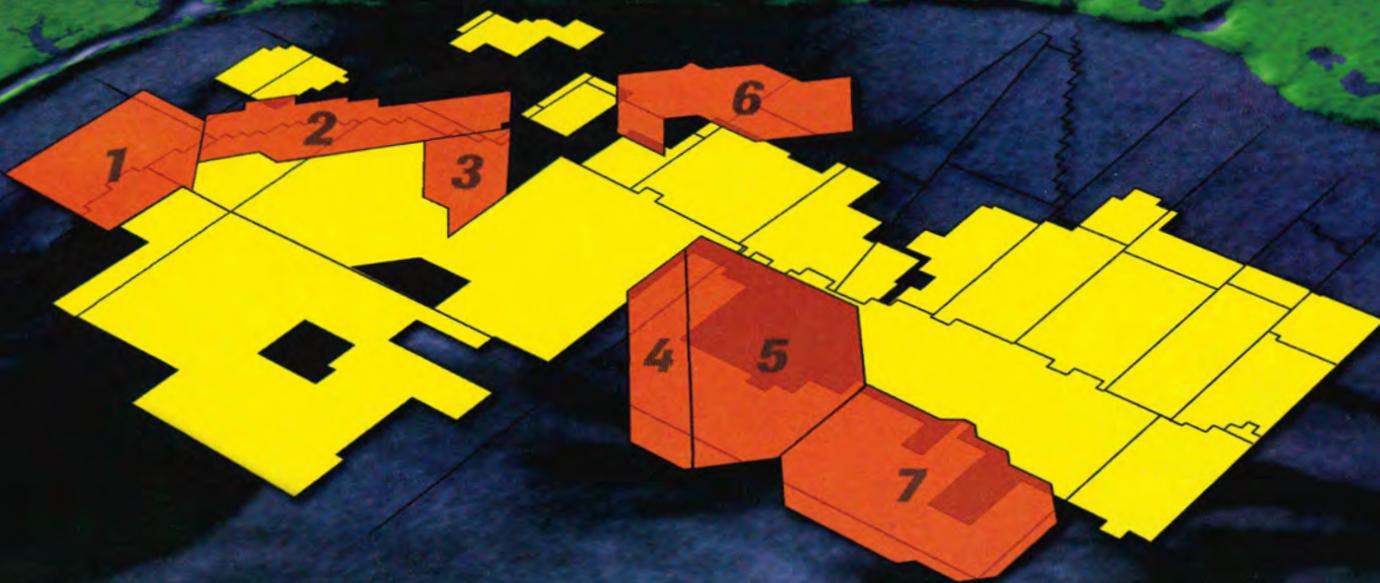
We've been around the block.

WesternGeco is committed to the Gulf of Mexico. Our acquisition crews and data processing centers have made available over 10,000 blocks of 3D data since 1987. Our recent activities in the Western Gulf will bring over **750 blocks** of new 3D seismic data to the industry.

 Now available  In progress

- | | |
|-------------------------------|--------------------------|
| 1. North Padre/Port Isabel | 5. Garden Banks Area 5 |
| 2. East Breaks/Mustang Island | 6. High Island/Galveston |
| 3. East Breaks Area 3 | 7. Garden Banks Area 7 |
| 4. Garden Banks Area 4 | |

-  Minimum 8000-meter cables
-  14-second recording
-  All prestack time migrated
-  Prestack depth imaging in progress (selected surveys)
-  AVO attributes available



For further information please contact WesternGeco Multiclient Services

Calgary: +1 403 509 4666 Dallas: +1 972 789 7739 Denver: +1 303 629 9250 Houston: +1 713 689 6800
Midland: +1 915 682 9247 New Orleans: +1 504 523 6781 Oklahoma City: +1 405 947 4700 Rio de Janeiro: +55 21 3824 6982
Email: multiclient@westerngeco.com

www.westerngeco.com A Schlumberger / Baker Hughes company

