

## PETEX PERSPECTIVES

From Director Greg McCormack



For many in the oil and gas industry, this year has been especially challenging. The recession has deeply impacted our industry as it has other sectors of the economy. But even in the face of uncertainty, there are signs of resurgence. Oil and gas prices are again on the rise, drilling

and production operations are picking up pace, and technologies for unconventional resources are steadily emerging. Companies cannot afford to stop developing the tools and resources needed for the upswing ahead.

But 2010 will bring the compounded challenge of a knowledge gap. A recurring theme of mine and a continuing focus of PETEX, this gap puts industry operations at risk. With so many near-retirees preparing to transition out and younger, less-skilled generations filing in, the industry now confronts the same dilemma

it did in the early 1980s. How do we ensure the skills and competency needed to perform jobs safely, timely, and accurately? And now you might ask: what is PETEX doing to help?

First, we are growing, improving, and expanding to places our clients are. Nearly 50 percent of PETEX courses are held on client sites and many are customized for company-specific needs. This year, PETEX trained in the Middle East and in Africa. In support of your multifaceted training needs, we have also embarked on flexible digital training options including e-books and e-training courses. New publications are being released and others updated. We fully reopened our West Texas Training Center in Odessa to offer the best in hands-on production and measurement training. And there is more. I invite you to visit our Web site and check out "Coming Soon" for updates on new courses, books, and services to help prepare your personnel for the economic upturn.

Even in a recession, companies know that proper training translates to a stronger bottom line. As companies firm their focus on safety and results, PETEX intensifies its focus on best-in-class global training options. Now is the time to build the people and processes to address the challenges and innovations that are leading us forward.

### PETEX Voice of Training

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 Mr. Steve Vorenkamp, Wild Well Control, Inc.

## PETEX to Exhibit at 2010 IADC/SPE Drilling Conference

February 2-4, New Orleans

PETEX will be exhibiting at the IADC/SPE Drilling Conference and Exhibition in New Orleans on February 2-4, 2010. If you are attending, **stop by booth #522** for information on our latest courses, publications, and digital training offerings.

We look forward to seeing you. For more information, call 281.443.7144.

## PETEX Appreciates You

On August 20, PETEX recognized well over one hundred subject-matter experts who were able to attend a special reception in honor of the more than 450 who assist PETEX. We thank all of them for their continued support and dedication to our training courses and industry publications. Individual certificates and company plaques were awarded. The awards presented were varied, including plaques in recognition of those who have provided 30 years of service. The celebration included presentations, refreshments, and networking with many of the industry's most accomplished participants. Here are just a few highlights.



PETEX Advisory Board members (left to right): **Richard Bobigian**, Chairman, Black Pool Energy; **Dr. Doug Elliot**, IPSI, an affiliate of Bechtel; **Bill Rehm**, Far East Energy; and **Steve Vorenkamp**, Wild Well Control. *Not pictured:* **Calvin Barnhill**, Northstar Exploration Company; **Dr. Paul M. Bommer**, The University of Texas at Austin; **Ed Burbach**, Gardere Wynne Sewell; **Gregg Perkin**, Engineering Partners; and **Bob Tippee**, *Oil and Gas Journal*.



**Dan Comstock** (left), PETEX; and **Robert McKinney** (right), M&J Valve, receive 30-year service awards.



**David Thompson** (left), and **Charlton Robertson** (right) M&J Valve, receive 25-year service awards.



**Gris Bowden**, John L. Wortham & Son, L.P., receives a 20-year service award.



**Marsha Yon** (left), Emerson Process Management, and **Dale Funke** (right), Shell, receive 20-year service awards.



## PETEX Appreciates You (Cont.)

Other Service Award Recipients (not pictured):

**Joel Boles**, BJ Services, 20 years

**Bill Young**, Meter Engineers, 25 years

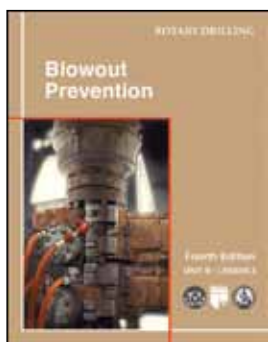
**Gerald Steindorff**, ProPlus Inc., 30 years

PETEX truly appreciates all who attended and thank you for your continued support. As a self-funded organization, your support is instrumental to our growth and will allow us to continue delivering the highest quality training content to the oil and gas industry.



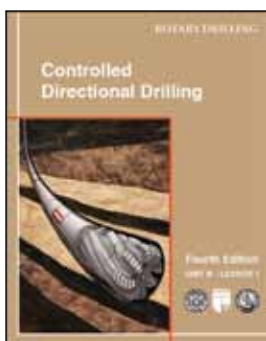
## What's New

### Blowout Prevention, 4th Ed.



A team of experts from Cudd Well Control have updated this informative book with input from Chevron, GE Oil and Gas, and Cameron. This edition is complete with full-color graphics and the latest prevention practices.

### Controlled Directional Drilling, 4th Ed.



Updated by directional drilling expert João Luiz Vieira of Halliburton with input from legendary expert Bill Rehm of Far East Energy and experts at Canrig, this full-color book introduces the science of deviating a well along a planned course.

### Basic EOR (Enhanced Oil Recovery) Course

**Offered at PETEX Houston and West Texas Training Centers**

This popular new course by industry experts Dr. Larry Lake and Dr. Mojdeh Delshad from The University of Texas at Austin reviews reservoir engineering fundamentals and principles of EOR processes.

### Field Handling of Natural Gas and Plant Processing of Natural Gas Courses

#### Emphasis on Operations

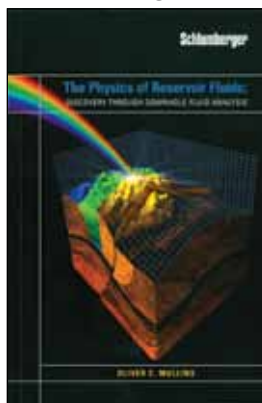
PETEX now offers separate courses for engineering and operations. These two new courses held at the West Texas Training Center in Odessa focus on natural gas field handling and plant processing operations.

### Economics of the Petroleum Industry—Risk and Uncertainty Course

Examine the key economic factors that affect our industry in this recession. Led by petroleum business practitioners, this timely and engaging course takes a close look at supply, demand, pricing, and decision-making with an eye on the future.

### Schlumberger Book! The Physics of Reservoir Fluids:

#### Discovery Through Downhole Fluid Analysis



Downhole fluid analysis (DFA), a new, rapidly growing discipline in wireline logging, has become a keystone in reservoir evaluation. DFA expert Dr. Oliver C. Mullins of Schlumberger gives an inside

look at reservoir fluids and their characterization by DFA.

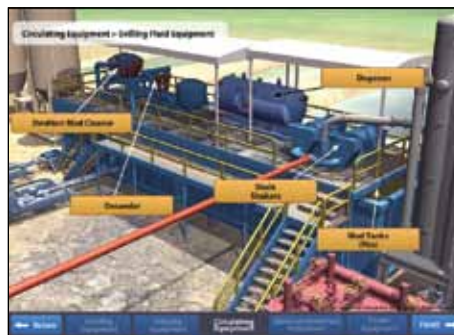


## PETEX Spans Globe to Better Serve You

PETEX wants to be the best we can be. To do so, we must stay abreast of the technologies and challenges that drive our industry. That's why we present, attend, and exhibit at conferences, serve on industry committees, and engage top experts in developing our training courses and publications. And that's why we continue broadening our offerings and global reach—to provide the exact standard of training you require.

Offering on-site and customized training solutions for clients at various international locations, we provide a complete analysis of clients' training needs and create appropriate curriculum per need and request. This year we traveled around the globe from Africa to Dubai and Canada to Oklahoma. To meet your growing needs for remote and on-site training, PETEX is developing digital training materials to address the global demand, including e-books, DVDs, streamed videos, and e-learning.

your personal computer, anytime, anywhere. Check out the "Coming Soon" page on our Web site for availability of e-books and specific e-learning products.



For multiple-user license inquiries, questions, or to inquire about how PETEX can help your company meet its e-training needs, contact us at [petex@www.utexas.edu](mailto:petex@www.utexas.edu) or visit our Web site and click Digital Training Solutions.



### e-Books

Our new e-books let you easily download and view content from our popular printed publications. Over 30 popular PETEX titles are currently being transformed into e-books. These e-books will use interactive features to facilitate learning including search capability, annotation, and an easy-to-read format.

### e-Learning

New PETEX interactive e-learning tools bring the power of hands-on training to your desktop. Our new multimedia e-learning tools give you just-in-time access to content prepared by industry experts. Popular topics are being transformed into engaging e-learning modules and tools with action-activated text, graphics, and helpful self-assessments. PETEX is preparing to launch its first e-learning modules in 2010.

PETEX has strived to deliver best-in-class training solutions. A variety of PETEX e-training solutions are in the works for delivery in 2010 and beyond for use on

### Digital Training Solutions

Delivering Oil and Gas Industry Expertise to Your Desktop

e-Books • e-Learning • DVDs • Streamed Videos

Find out what's available when you visit our Web site. It's easy to purchase with our new online shopping cart!

## 2010 Courses at the PETEX West Texas Training Center

- Basic EOR (Enhanced Oil Recovery)
- Completion and Workover
- Elementary Drilling
- Field Handling of Natural Gas—Emphasis on Operations
- Gauging, Testing, and Running of Lease Tanks
- Natural Gas Measurement—Fundamentals
- Natural Gas Measurement—Design/Application/Inspection
- Petroleum Fundamentals
- Plant Processing of Natural Gas—Emphasis on Operations
- Production Technology
- ValvePro® Certified Valve Maintenance Technician

The 2010 course dates are now online! To enroll in classes now being offered in Odessa on the University of Texas of the Permian Basin campus and find a map and directions, visit [www.utexas.edu/ce/petex](http://www.utexas.edu/ce/petex) and click on Training Courses.



WINTER TRAINING

For the complete 2010-2011 schedule, visit [www.utexas.edu/ce/petex](http://www.utexas.edu/ce/petex)

School	CEUs	Location	Length	Dates	Tuition
Pipeline Technology	10.9	Houston	14 ½	Jan. 25-Feb.12	\$5,580
1st Week			5	Jan. 25-Jan. 29	\$1,890
2nd Week			5	Feb. 1- Feb. 5	\$1,890
3rd Week			4 ½	Feb. 8- Feb.12	\$1,800
Gauging, Testing, and Running of Lease Tanks	1.1	Odessa	1 ½	Feb. 16-17	\$ 605
	1.1	Odessa	1 ½	Feb. 18-19	\$ 605
Production Technology	7.1	Houston	9 ½	Feb. 22-Mar. 5	\$3,690
1st Week			5	Feb. 22- Feb. 26	\$1,890
2nd Week			4 ½	Mar. 1-5	\$1,800
Elementary Drilling	3.3	Houston	4 ½	Mar. 1-5	\$1,800
Petroleum Fundamentals	3.3	Houston	4 ½	Mar. 8-12	\$2,050
Natural Gas Measurement Fundamentals	2.3	Odessa	3	Mar. 8-10	\$1,180
Design/Application/Inspection	1.1	Odessa	1½	Mar.11-12	\$ 780
ValvePro® Certified Valve Maintenance Technician	2.3	Odessa	3	Mar. 17-19	\$1,295
Hydraulics for Pipeline Engineers	3.3	Houston	4 ½	Mar. 15-19	\$1,800
Introduction to Offshore Operations	3.3	Houston	4 ½	Mar. 22-26	\$2,310

Some courses have associated publications available by enrolling in the training class or by ordering from the 2010 *Petroleum Extension Service Catalog*: call 800.687.7052 for more information.

Courses are held at the PETEX Houston Training Center, 2700 W.W. Thorne Blvd, Houston, TX 77073 and at the West Texas Training Center, 4901 E. University Blvd, Odessa, TX 79762. Training dates are subject to change.

To enroll, visit [www.utexas.edu/ce/petex](http://www.utexas.edu/ce/petex), call 800.687.7052, fax 281.443.8722, and/or email [petexhtc@www.utexas.edu](mailto:petexhtc@www.utexas.edu).

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## Downhole Fluid Analysis Provides New Insights Into Reservoir Fluids

By Dr. Oliver C. Mullins

The subsurface reservoir remains the greatest technical uncertainty in the oil and gas industry today. The old assumption that a reservoir consisted of one giant tank of one homogeneous hydrocarbon is giving way to a more accurate, but much more complex, vision. A new technology, downhole fluid analysis (DFA) performed in openhole wireline, is proving to be crucial in understanding the complexity of the oil column. As DFA spreads rapidly to become an industry mainstay, it is creating an overnight revolution in reservoir evaluation.

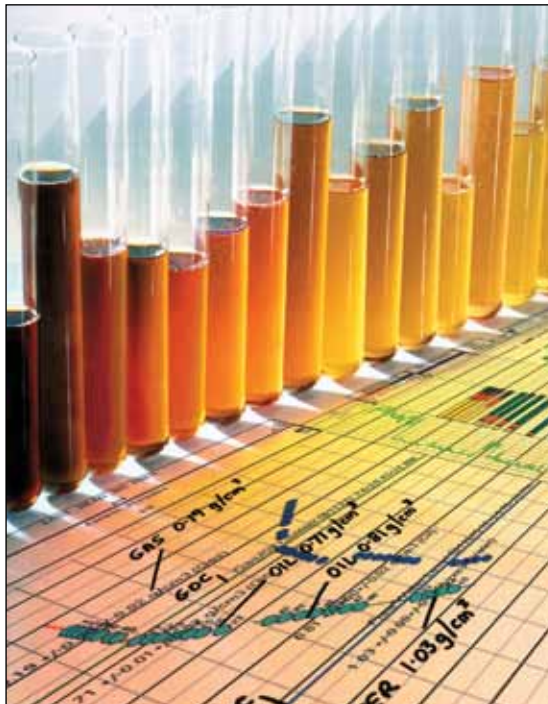
DFA is based on optical spectroscopy measurements that are novel for the upstream oil business. It is often the case that new physics measurements yield dramatically new insights. DFA case studies show that gravity acting on equilibrated light crude oils yields large gradients in gas-oil ratio. In addition, DFA now shows that asphaltene distributions in reservoir black oils undergo gravitational grading. Often, however, reservoir fluids are not in equilibrium. DFA case studies have shown that current reservoir charging can yield nonequilibrium gradients. Other nonequilibrium mechanisms include biodegradation and charge history. In addition to hydrocarbons, nonhydrocarbons such as CO<sub>2</sub> can also exhibit gradients as shown by DFA case studies.

The greatest source of risk in virtually all offshore projects is compartmentalization within a reservoir.

Each offshore well is a highly expensive endeavor; to be profitable, it must drain large compartments. However, there is no possible imaging technology that can show

compartments. Pressure communication can occur across compartments (in the context of geologic time), but, contrary to common assumption, this does not mean that flow communication exists (in the context of production time). However, DFA provides new methods to detect compartmentalization and reservoir connectivity. DFA case studies often reveal both high-density fluids higher in the column and stair-step discontinuous fluid profiles, thereby establishing the existence of sealing barriers. In addition, DFA case studies reveal, for the first time, asphaltene equilibrium distributions in reservoirs indicating connectivity, which has been subsequently proven in production.

DFA fluid analyses are totally distinct from traditional geochemical approaches. Yet the two are proving to be complementary. Indeed, DFA case studies linked with the world's leading analytical laboratories establish that frequently, it is the concentration that varies in reservoirs and often not the chemical constituents that are different. DFA has been shown to be the method of choice to characterize these concentration differences.



*As Reservoir Domain Champion for Wireline Headquarters of Schlumberger, Dr. Mullins has become a pivotal force in the field of downhole fluid analysis. A chemist with a Ph.D. from Carnegie-Mellon University, Dr. Mullins has been a Distinguished Lecturer for both SPE and SPWLA, has coedited three books on asphaltenes, coauthored 140 publications, and coinvented 52 allowed U.S. patents.*

**Inside this issue: Dr. Mullins' new book, available now.**

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