



# News NETWORKS

Petroleum Technology Transfer Council WWW.PTTC.ORG

## Program Focus on Independents

Late summer is planning time for PTTC in preparation for the start of the new operating year. The organization interacts extensively with industry volunteers serving in regional Producer Advisory Groups, or PAGs, to shape next year's technical program. The professionals who comprise the ten technical working groups around the country contribute a great deal of time and expert guidance year after year in order to aid in the extraction of left behind hydrocarbons in mature basins. The PAG's efforts are making a positive impact by utilizing the nation's energy infrastructure to its fullest potential.

In each region there are 15 to 20 technically-specialized professionals representing many different industry seg-

*Cont. on page 2*

## A Focus on Unconventional Gas

With fall in the air the general public thinks of football and their heating bills for the upcoming winter. There is no denying that natural gas supplies will be tight, but those exploring for and developing natural gas have had a strong focus for years on exploiting resources in unconventional gas plays. The results are tangible—unconventional gas is already a significant North American resource. In this area where technologies are evolving rapidly, individuals rely heavily on networking and conferences/meetings to stay abreast of the latest successes and failures. Summarized below are several recent and upcoming meetings of note. Contact PTTC representatives and they can help you "connect" with more information about those meetings.

### Upcoming Conferences/Meetings

#### Emerging Technology Conference: Meeting Challenges in Finding and Producing Unconventional Natural Gas

Oct. 28, 2004 in conjunction with IPAA's annual meeting - Austin, Texas

#### Unconventional Gas Reservoirs Seminar (Nov. 3, 2004)

#### Barnett Shale III Symposium (Jan. 2005)

Ellison Miles Geotechnology Institute, Brookhaven, Texas

#### Unconventional Gas: The Key to Energy Supply

Canadian Society for Unconventional Gas and Petroleum Technology

Alliance Canada, Nov. 17-19, 2004 - Calgary, Alberta, Canada

### Recent Conferences/Meetings of Note

#### Rocky Mountain Natural Gas 2004

#### Colorado O&G Assn. & AAPG Rocky Mountain Section

Aug. 9-11, Denver, Colorado

#### Barnett Shale and Other Fort Worth Basin Plays

Ellison Miles Geotechnology Institute

June 22-23, 2004, Brookhaven, Texas

#### Unconventional Energy Resources in Southern Midcontinent

#### Oklahoma Geological Survey

(PTTC Summary — [www.pttc.org/news/1qtr2004/v10n1p7.htm](http://www.pttc.org/news/1qtr2004/v10n1p7.htm))

March 9-10, 2004 in Oklahoma City, Oklahoma

## In This Issue

Environmental Corner	3
Tech Transfer Track	4-6
State-of-the-Art Summary	7-9
DOE Digest	10-11
Industry View	12
PTTC Tech Info	13
Upcoming PTTC Events	15

PTTC is a national not-for-profit information network formed in 1994 by oil and natural gas producers. Programs are funded by matching funds from the US Department of Energy (DOE) with funds from State Governments, Universities, State Geological Surveys and Industry. This program would not be possible without contributions from the DOE Office of Fossil Energy through the National Energy Technology Laboratory (NETL).

The Barnett Shale is currently one of the hottest domestic gas plays in the U.S. The PTTC Texas Region has received many requests for more information from operators and realized that a one-stop website dedicated to Barnett Shale Resources would be beneficial. This website, which will be coming soon on the Texas regional website ([www.energyconnect.com/pttc/](http://www.energyconnect.com/pttc/)), may also provide additional resources for those working other gas shale plays that are interested in using Barnett Shale insights and lessons learned as an analog. ♦



Cont. from page 1, Program Focus on Independents

ments. These voluntary PAGs consist of oil and natural gas producers, solution providers and technical consultants. From among themselves, each regional volunteer group or PAG elects an independent producer to serve as their regional representative on the PTTC National Board of Directors. In the annual planning process they determine the tech transfer focus for a given area based on common challenges and opportunities facing upstream operations. PAG members are called upon to first identify all technical topics of relevance by talking with the industry at large. Discussion among the group members then turns to prioritization, as not all ideas can be addressed each year due to resource limitations.

Once the regional program scope is solidified, the PAGs turn toward allocating how best to use the tech transfer tools developed over the last decade—namely workshops, regional and national newsletters, interconnected websites, technical publications, case studies and resource centers. From past experience, PTTC has found that ideas are most effectively transferred during face to face or workshop settings. In many regions, the PAG members serve as workshop moderators and assist in securing technical speakers while the meeting is being planned. Finally, the PAG representatives communicate regional issues

to the National Board for increased inter-regional tech transfer.

As the PAGs interact with industry at large, we are commonly asked if PTTC is part of DOE. The PTTC program would not be possible without the federal funding support of the National Energy Technology Laboratory's Strategic Center for Natural Gas and Oil within DOE. These funds are matched by state funding and industry contributions, which create the unique partnership of federal-state-industry-universities (see Regional Resource Centers, page 13) led by independent producers. With those financial resources, PTTC strives to alert industry to technical applications, upcoming opportunities and "connections" from all sources, of which the DOE oil and gas RD&D program is a key developer and enabler. The extensive effort of 10 Regional Lead Organizations and regional and national volunteers demonstrate PTTC is truly an industry-led, regionally focused organization.

Commitment as a PAG member involves a certain amount of discussion time by meeting in person and/or by phone. The value resides with the industry contributors who are developing ways that PTTC could benefit operations within their region. If you are interested in shaping PTTC's direction and want to get involved, feel free to contact the PTTC. ♦



PTTC Texas Region and Core Labs joined forces to organize a reservoir fluids workshop titled "From the Matrix to the Market—What You Don't Know CAN Hurt You" that was held at Core Labs headquarters in Houston on July 28, 2004. Instructors from left to right are Dr. William D. (Bill) McCain, Jr., Texas A&M University; Toddy Guidry, Core Labs host; Dr. Kosta J. Leontaritis, AsphWax, Inc; Dr. Dave Berman, BP, and Jack Lynn, Core Labs. For more information about the workshop and links to all of the PowerPoint presentations, visit the Texas Region website at [www.energyconnect.com/pttc/archive/jul2004matrixtomarket.htm](http://www.energyconnect.com/pttc/archive/jul2004matrixtomarket.htm).

## Meeting Alerts

### Gulf Coast Association of Geological Societies Annual Meeting

October 10–12, 2004  
San Antonio, TX.

[www.stgs.org/gcags.htm](http://www.stgs.org/gcags.htm)

### SEG Annual Meeting

October 10–15, 2004  
Denver, CO.

<http://meeting.seg.org/>

### IOGCC Annual Meeting

October 17-19, 2004  
Oklahoma City, OK.

[www.iogcc.state.ok.us/EVENTS.HTM](http://www.iogcc.state.ok.us/EVENTS.HTM)

### Permian Basin International Oil Show

October 19–21, 2004  
Odessa, TX.

[www.pbioilshow.org/](http://www.pbioilshow.org/)

### AAPG International

October 24–27, 2004  
Cancun, Mexico

[www.aapg.org/meetings/can04/index.html](http://www.aapg.org/meetings/can04/index.html)

### IADC Well Control Conference of the Americas

October 25–26, 2004  
Albuquerque, NM.

[www.iadc.org/conferences/WA4-call2.htm](http://www.iadc.org/conferences/WA4-call2.htm)

### Stripper Well Consortium Fall Tech Transfer Meeting @ MWC Trade Fair

Oct. 26, 2004, Oklahoma City, OK.  
Nov. 15-16, 2004, University Park, PA.

[www.energy.psu.edu/swc/meetings.shtml](http://www.energy.psu.edu/swc/meetings.shtml)

### Society of Petroleum Engineers

#### ATW: Tracer Testing for Oilfield Applications

October 18–19, 2004, Corpus Christi, TX.  
[www.spe.org/spe/jsp/meeting/0,2460,1104\\_1535\\_2508390,00.html](http://www.spe.org/spe/jsp/meeting/0,2460,1104_1535_2508390,00.html)

#### ATW: Enhanced CBM Recovery & Carbon Sequestration

October 28-29, 2004, Denver, CO.  
[www.spe.org/spe/jsp/meeting/0,2460,1104\\_1535\\_2572851,00.html](http://www.spe.org/spe/jsp/meeting/0,2460,1104_1535_2572851,00.html)

#### ATW: Hydraulic Fracturing

November 10–11, 2004  
Farmers Branch, TX.  
[www.spe.org/spe/jsp/meeting/0,2460,1104\\_1535\\_2701880,00.html](http://www.spe.org/spe/jsp/meeting/0,2460,1104_1535_2701880,00.html)



## Presidential Methane to Markets Partnership Announced

The Environmental Protection Agency (EPA) recently announced that the U.S. will join efforts with Australia, India, Italy, Japan, Mexico, the United Kingdom, and Ukraine to develop and promote cooperation on the recovery and use of methane that would otherwise leak into the atmosphere. The Partnership will focus on deploying cost-effective technologies in landfill gas-to-energy projects, **methane recovery projects at coal mines**, and **improvements in natural gas systems**. Canada, China, and Russia are seriously considering joining the partnership.

EPA's Natural Gas STAR Program will take the leading role to identify and implement cost-effective methane emissions reduction activities. The two main Gas STAR goals of this undertaking are to implement cost-effective natural gas system methane emissions reduction projects with measurable results, and to build lasting capacity, enabling these projects to continue and replicate. Gas STAR

Partners with international holdings are strongly encouraged to become actively involved with this effort by considering methane emissions reduction project opportunities within the framework of this initiative.

The Gas STAR Program will assist in organizing the official Partnership Ministerial Meeting, which will be held November 15-17, 2004, in Washington, DC.

For more information, visit EPA's ([www.epa.gov/methane/international.html](http://www.epa.gov/methane/international.html)) or contact EPA's Roger Fernandez (email [Fernandez.roger@epa.gov](mailto:Fernandez.roger@epa.gov)).

## New QLD Gas Dehydrator Technology

Engineered Concepts, LLC, Farmington, NM, has developed new gas dehydrator technology, termed Quantum Leap Dehydrator (QLD), for dehydrating natural gas with lower emissions. The integrated QLD process reduces emissions by collecting water and hydrocarbons present in the glycol reboiler vent

stream, both condensable and non-condensable fluids. The two primary condensable products are wastewater and hydrocarbon condensate, which can be sold. The reboiler burner combusts the uncondensable vapors as the system's primary fuel, lowering fuel requirements significantly compared to conventional glycol units.

The Greenhouse Gas Technology Center, Southern Research Institute ([www.sri-rtp.com](http://www.sri-rtp.com)), verified performance in a seven-day field test at a Kerr McGee natural gas gathering station in Brighton, Colorado, in spring 2003. The verification test manager noted that the QLD is "effective, efficient, and has an environmental impact that's lower than most standard technology." Full results of the verification test are available online ([www.sri-rtp.com/Quantum\\_Leap.htm](http://www.sri-rtp.com/Quantum_Leap.htm)).

Information extracted from [www.findarticles.com/p/articles/mi\\_m4PRN/is\\_2004\\_March\\_31/ai\\_114770743](http://www.findarticles.com/p/articles/mi_m4PRN/is_2004_March_31/ai_114770743), *Greenhouse Gas Technology News* (April 2004, Issue 9) and the verification report itself. Engineered Concepts, LLC (phone 505-325-4827).

## GTI Creates Environmental Issues Consortium

The Gas Technology Institute (GTI) has formed the Environmental Issues Consortium (EIC). Through the EIC, participating companies pool their resources to identify industry needs and support collaborative research programs. High-priority industry environmental concerns include the need to develop:

- Advanced chemical forensic techniques for identifying industry-associated wastes
- Rapid field testing techniques for PCB detection
- Pipeline integrity management programs
- Sediments management programs
- Greenhouse gas inventory techniques
- Air-quality management methods
- Techniques and technologies for manufactured gas plant site management.

EIC hopes to come away with an understanding of where research is most needed in this area, the specific problems that need to be addressed first and the sources of funding for this research. The EIC's first meeting was held Aug. 6 in Chicago. *Those interested in the EIC should contact Diane Saber (847-768-0538).*

*Issues & Solutions in Exploration, Production & Refining*

ELEVENTH ANNUAL

**INTERNATIONAL  
PETROLEUM  
ENVIRONMENTAL  
CONFERENCE**

**October 12-15, 2004**

**Albuquerque, New Mexico**

**Albuquerque Hilton Hotel**

**Organized By**  
The University of Tulsa, Continuing Engineering & Science Education (CESE)  
The Integrated Petroleum Environmental Consortium (IPEC)

**In Collaboration With**  
National Energy Technology Laboratory of the U.S. Department of Energy (NETL)  
Office of Research and Development of the US Environmental Protection Agency

**FOR INFORMATION:**  
Call: 918-631-3088 • Email: [IPECenrollment@utulsa.edu](mailto:IPECenrollment@utulsa.edu)  
Website: [www.cese.utulsa.edu](http://www.cese.utulsa.edu) or <http://ipecc.utulsa.edu>



PTTC recognizes that products and services featured in "Tech Transfer Track" may not be unique and welcomes information about other upstream technologies. PTTC does not endorse or recommend any of the products or services mentioned in this publication, even though reasonable steps are taken to ensure the reliability of information sources. Input can be directed to [HQ@pttc.org](mailto:HQ@pttc.org).

### Visualization Centers, What if I Want to See One First?

In the last issue of *PTTC Network News*, we listed visualization centers available for lease in the Houston area. If you want to first see how they work, go to the Society of Exploration Geophysicists International Exposition and 74th Annual Meeting, October 10–15, 2004 in Denver, CO. A complete visualization theatre will be set up in the exhibit hall. See the visualization applications, workflows and hardware. There will be presentations on the unique capabilities to enhance the interpretation process and presentations on the hardware and software making it all work. Hardware providers include HP, IBM, Sun, SGI, Barco, Fakespace, Landmark, Paradigm and Schlumberger. ♦

### RAPPS (Reasonable & Prudent Practices for Stabilization)

The Independent Petroleum Association of America (IPAA) and several other oil and gas trade associations and their members have compiled RAPPS, or Reasonable and Prudent Practices for Stabilization for oil and natural gas E&P sites. The RAPPS guidance lists various operating practices and control measures used by operators to effectively control erosion and sedimentation in storm water runoff from clearing, grading, and excavation operations at oil and gas exploration and production sites under various conditions of location, climate, and slope.

After a producer determines that storm water runoff from clearing, grading, and excavation operations requires coverage under a Construction General Permit (CGP), the producer should consult the Environmental Protection Agency's or the state's CGP to evaluate whether those permits require different or additional best management practices (BMPs) beyond the reasonable and prudent practices described in the RAPPS document.

The RAPPS are suggestions of alternatives, from which one or more of the listed techniques or practices may be selected for a given site under site-specific circumstances. Not all RAPPS listed will necessarily be required for any given project. The list of RAPPS may not exhaust all of the available

RAPPS that may be effective for any given construction site. Other RAPPS not listed on the flowcharts may be beneficial for controlling surface water runoff from a construction site, in addition to or in lieu of the RAPPS listed in this document.

Each topographic area type of the country is treated separately. Within each topographic area type, decision tree analyses are presented based on the percentage of vegetative cover and the distance to regulated water bodies. For each category, possible RAPPS are presented. As the instructions indicate, a producer may choose one or a combination of the RAPPS to control runoff from the construction site.

Further information about RAPPS are available online at [www.ipaa.org/govtrelations/RAPPS.asp](http://www.ipaa.org/govtrelations/RAPPS.asp). ♦

### 2003–2004 Oil & Gas Producing Industry in Your State

This unique look at the oil and natural gas industry in each of the 33 producing states is published each year as the special statistical issue of *America's Independent*, official magazine of the Independent Petroleum Association of America (IPAA). The annual publication details information covering the upstream side of the industry, including prices, production, severance taxes, industry employment, and drilling.

Roustabout and corporate members of IPAA may receive one free copy of this issue, additional copies cost \$25. Non-members of IPAA are charged \$75 per copy. When purchasing, mention you heard about it through PTTC's newsletter and you can purchase the issue for a reduced price of \$35. Contact Fred Lawrence (phone 202-857-4722, email [Flawrence@ipaa.org](mailto:Flawrence@ipaa.org)). ♦

### A Virtual Student Expo Offered by Major Professional Societies

Major E&P technical societies have worked together to develop the Virtual Student Expo (EXPO), designed to connect undergraduate/graduate students with prospective employers. Participating societies are the American

Association of Petroleum Geologists (AAPG), the Geological Society of America (GSA), the Society of Exploration Geophysicists (SEG) and the Society of Petroleum Engineers (SPE).

The web-enabled Expo matches students with potential employers for full-time entry-level positions and internships. The Expo allows students to post resumes—along with examples of their work or a short video—to virtually present themselves. Students who are members of the sponsoring professional societies may utilize the Expo free of charge. Employers pay a small fee to access the student postings and to post job openings. With the virtual information, employers can improve recruiting efficiency. Truly a win-win for both.

Visit the society websites ([www.aapg.org](http://www.aapg.org), [www.geosociety.org](http://www.geosociety.org), [www.seg.org](http://www.seg.org), [www.spe.org](http://www.spe.org)) for more information. ♦

### PC-Based Software for Lightweight Cement Decisions

A PC-based decision tool, SmartCement by CSI Technologies, is available from 3M for selecting a lightweight cement system. It evaluates suitability of typical density-reducing additives for casing cement at various conditions. Given operating parameters supplied by the user, it will suggest a low-density cementing option and identify several alternatives. SmartCement is one result of a three-year DOE-supported project to help develop lightweight cementing systems for deepwater wells and other critical applications.

Contact DOE's Gary Covatch (phone 304-285-4589, email [gary.covatch@netl.doe.gov](mailto:gary.covatch@netl.doe.gov)) for information on how to get this free software. ♦

### Practical, Low-Cost Field Solutions

Leading edge technologies can be fun, but for most marginal leases, it's the day-to-day operations that are critical. Omega Technologies, Inc. (Omega), Texas, is focusing its innovation on bottom-line operational matters. Two examples of Omega's effort include:



**Tubing saver rotator (manual)**—Wear is often a primary component in downhole failures, and often rod wear occurs on only a small fraction of the tubing's circumference. Manually rotating the tubing (which Omega's TSR makes possible using a basic pipe wrench) on a monthly/quarterly basis distributes wear more uniformly around the circumference. Manual rotation with TSR in an Illinois oil field with 25 marginal wells reduced failures 76% (SPE #80886). Costs are low, such that payout typically occurs if just one pulling job is eliminated. Obviously, this applies only to unanchored wells.

**Sidestream Flush Restrictor**—Conventional approaches for continuous chemical treatment with sidestream flushing are prone to needle valve plugging, or larger than desired flush volumes (which costs extra money to relift) often occur. This alternative approach using small diameter hose (large enough so plugging is not a problem, small enough that a few feet of length provides enough pressure drop to restrict flow) provides reliable sidestream flushing while lowering lifting costs since excess flushing is minimized.

For more information on these specific products, visit Omega's website ([www.omegaltechnologies.com](http://www.omegaltechnologies.com)) or phone 281-538-5678. While at the Omega website, review the rod/tubing failure analysis information ([www.omegaltechnologies.com/additional.html](http://www.omegaltechnologies.com/additional.html)). It just might save you money. ♦

## FEE Exploration Tool Expanded to Devonian Carbonates in SE New Mexico

Researchers at the Petroleum Recovery Research Center (PRRC) at New Mexico Tech have adapted a FEE (Fuzzy Expert Exploration) tool—originally developed for Brushy Canyon exploration in the Delaware Basin ([www.pttc.org/columns/aogrcoc03.htm](http://www.pttc.org/columns/aogrcoc03.htm))—to exploration for Siluro-Devonian carbonates of southeast New Mexico. A state-of-the-art fuzzy expert system developed at PRRC forms the heart of the package.

Modern databases and web-based java software design make the software useable by anyone with web access. Primary software features include rapid assessment of a prospective location with the ability to customize the system to each user's needs. PTTC's Southwest Region will co-host a demonstration/training session planned this fall.

For further information, contact Robert Balch (phone 505-835-5305, email [balch@prrc.nmt.edu](mailto:balch@prrc.nmt.edu)). Excerpted from *PRRC Review*, Summer 2004. ♦

## Cleaning Out Wellbore Debris

With current high oil prices, it's a fact of life that many older wells are being cleaned out and reactivated. It seemed appropriate to highlight well cleanout, presenting tools/equipment offered by just one of the vendors as an example—in this instance BJ Service's Well Cleaning System. Their package includes:

- **TruGage Casing Scraper**—Removes casing burrs, scale, cement sheath, hard mud deposits, corrosion products.
- **RuffPup Casing Brush**—360° contact that works with scraper and chemicals to clean casing to bare metal. The design allows for bristle cleaning and debris removal by circulating fluid, with no bristle loss.
- **Downhole Debris Filter**—removes metal/solids from wellbore with special debris filter and retention chamber. Provides reverse circulation of downhole assemblies without having to reverse from surface, saving valuable rig time.
- **Fluid-Actuated Circulating Sub**—enhances well displacement operations by providing optimum annular velocity throughout all wellbore configurations.
- **Drillable Casing Brush**—used to clean casing below bridge plugs, retainers, etc. to enhance and prepare tool seating area.

Visit BJ Service's website ([www.bjservices.com/website/Completions.nsf/WellboreCleaningFrameset?openframeset](http://www.bjservices.com/website/Completions.nsf/WellboreCleaningFrameset?openframeset)) for further information. ♦

## Calliope Gas Recovery System Producing Reserves in Depleted Gas Wells

Credo Petroleum Corporation (Credo) employs the Calliope Gas Recovery System (Calliope), licensed exclusively to Credo, to increase production and reserves in very marginal (dead or uneconomic) gas wells. Calliope is able to do this because it achieves substantially lower reservoir abandonment

pressure than can be achieved with conventional lift methods. With Calliope, three wellbore chambers are created using concentric tubing strings. Compressed natural gas is injected down the annulus of concentric tubing, liquid is lifted up the inner tubing, and dry gas flows up the outer tubing-casing annulus. The only downhole moving part is a standing valve that has proven to be very reliable. The system is energized by a conventional oilfield compressor. A surface gas management platform using standard oilfield components controls the process.

Credo cites results for 10 wells, either dead or uneconomic, that it bought from other operators and then installed the Calliope system. Depths ranged from 8,200 to 18,400 feet. Production rates ranged from 75 to 650 Mcf per day, averaging 270 Mcf per day. Incremental proved reserves ranged from 0.58 to 2.22 Bcf, averaging 1.1 Bcf. Reserve addition costs were \$0.50 per Mcf or less. Specific data are presented for three wells in western Oklahoma.

Visit Credo's website ([www.credopetroleum.com](http://www.credopetroleum.com)) for further information. ♦

## PTTC Workshop Panel



A local panel of engineers working in the Illinois Basin lead a discussion to summarize the ideas presented by Rodney Reynolds and Bob Kiker at the "Produced Water and Associated Issues" workshop held in Illinois in March 2004. Panel members include from left to right, Ken Hake, Baker Petrolite; Matt Stone, Barger Engineering; Brad Aman, Continental Resources of Illinois; Robert Stewart, Stewart Producers; Lester Moore, MEPCO Inc. and Bryan Dicus, Elysium Energy. Scott Frailey, not shown, petroleum engineer with the Illinois State Geological Survey, served as moderator.



### Casing Drilling and Underbalanced/Managed Pressure Drilling

In a recent Oil and Gas Roundtable meeting in Houston, Mike Bahorich of Apache Corp. cited some of their experience combining casing drilling and underbalanced drilling.

Since mid-2000 or so, the company has been drilling the tough Fort Worth Basin of North Texas. Typically, there are multiple producing horizons, many of which have very low formation pressures. Lost circulation or extreme formation damage are critical challenges and casing drilling performed underbalanced can address both.

Bahorich cited Apache's experience in the Stratton field. Here, the target is several interbedded Frio sands with bottomhole pressures varying from 90 psi to 2,800 psi. Using conventional drilling techniques on the first 22 wells drilled, Apache's average inflow potential (IP) had flat-topped at about 228 Mcfg/d. Starting in 2003 the company combined the UBD technique with casing drilling on three new wells and achieved solid results. Drilling time was down and production results up, averaging 753 Mcfg/d in 10 wells drilled in 2004 with casing drilling underbalanced. Consumables costs—fuel, mud and cement—were down measurably. Factors contributing to time savings included not having to run drillpipe, reduced bottomhole assembly time, and reduced "flat" time since the rig was always drilling. There were fewer hole problems and the well was always under control. And since casing drilling supports logging while drilling (LWD), real time data were available.

Apache's success with casing drilling has been experienced by BP in Wyoming and by ConocoPhillips in South Texas with results documented in SPE papers. Although not broadly used yet, there is evidence the technology combination is here to stay.

*Excerpted from Dick Ghiselin's column in Hart's E and P ([www.eandpnet.com/ep/previous/0804/0804well\\_construction.htm](http://www.eandpnet.com/ep/previous/0804/0804well_construction.htm)), August 2004. Readers are encouraged to read a complementary article on "Blending Technologies (Casing Drilling and Managed Pressure Drilling) Can Eliminate Casing Strings" appearing in Drilling Contractor ([www.iadc.org/dcpi.htm](http://www.iadc.org/dcpi.htm)), September/October issue. ♦*

### DEA Continues to Stimulate Drilling Technology Advances

Meeting quarterly, the Drilling Engineering Association (DEA, [www.dea.main.com](http://www.dea.main.com)) continues to be an effective vehicle for stimulating drilling technology advances. PTTC hosted the most recent quarterly meeting in Houston where updates were provided on active projects, new proposals were outlined and special presentations heard.

#### Active Projects:

- "Proposal to Develop an Improved Methodology for Pre-drill Pore Pressure and Fracture Gradient Prediction for Deepwater Wells (DEA-119)"—Jim Bridges, Knowledge Systems
- "Hard Rock Drilling Performance Improvement Through Impregnated Drill Bit Technology (DEA-148)"—Arnis Judzis, TerraTek
- "Modernization of Connection Performance Properties (DEA-151)"—Brian Schwind, PPI Technology

#### New proposals included:

- "Step Change in Directional Drilling Control and Efficiency when using Motor Steerable Systems (DEA-157)"—Slider LLP with sponsor, ChevronTexaco
- "Smart Shuttle (DEA-156)"—Smart Drilling & Completions & Triangle Technology A/S with sponsor ENI Norway

UWG Group, a consortium of companies, also described a separately launched JIP on "Pre Installation of Conductors."

#### Other special presentations included:

- "Long-term High Temperature Well Demonstration at Sandia National Laboratories" by Randy Norman, Sandia National Lab ([www.sandia.gov/geo/thermal/htwell/](http://www.sandia.gov/geo/thermal/htwell/))
- "Deep Trek Update" by Gary Covatch, DOE's National Energy Technology Laboratory.

*Readers are encouraged to check the International Association of Drilling Contractor's website for the September/October issue of Drilling Contractor ([www.iadc.org/dcpi.htm](http://www.iadc.org/dcpi.htm)) for an article summarizing technical presentations made at DEA's June workshop in Galveston. ♦*

### EOR Via Top-Down Acid Gas Injection

Apache Canada Ltd. (Apache) is applying top-down acid gas injection as an enhanced oil recovery (EOR) process to pinnacle reef reservoirs in its Zama Field in northwest Alberta. Secondary production there leaves about 65% of the oil in the ground. Sour production requires stripping. In conventional operations about two-thirds of the acid gas (two-thirds CO<sub>2</sub> and one-third H<sub>2</sub>S) is disposed of through re-injection and the rest is processed into elemental sulphur. Processing releases CO<sub>2</sub> and there has been a persistent oversupply of elemental sulphur. Apache looked for other options.

Apache will inject acid gas into the top of pinnacle reefs. Acting as a solvent, the acid gas will drive oil down to a recovery well at the bottom of the pinnacle. In addition to recovering oil, the pinnacle reefs might provide long-term storage for CO<sub>2</sub> and H<sub>2</sub>S sequestration. If all goes according to plans, sulphur-extraction operations at the Zama plant will cease, solving the sulphur stockpile program. Since operations were already handling the CO<sub>2</sub> and H<sub>2</sub>S, additional handling risks are not created.

Initially two pinnacle reefs will undergo top-down acid gas injection, and there are plans to add one or two per year should things go as planned. Seven candidate pinnacles have already been identified within four miles of the Zama gas plant. Primary reservoir risk is controlling the injection/displacement process to minimize channeling or fingering. Permeability can be quite variable in pinnacle reefs. Initial pinnacle projects will provide insight on achievable injection/displacement rates.

*Excerpted from "Sweet Sour Gas Solution," New Technology Magazine, July/August 2004, pp. 22-23 ([www.ntm.nickles.com](http://www.ntm.nickles.com)). Apache contact for more information: Bill Jackson, Ph 403-261-1200, email [bill.jackson@apachecorp.com](mailto:bill.jackson@apachecorp.com). ♦*

#### Ever Wonder What All Those GIS Terms Meant?

DLG - ECW - DRG  
SHP - TWF - DOQQ

View a slide discussion of GIS-related terminology, courtesy of Amigos Energy Advisors, LLC ([www.amigosenergy.com/gisalpha-soup.pdf](http://www.amigosenergy.com/gisalpha-soup.pdf)). ♦



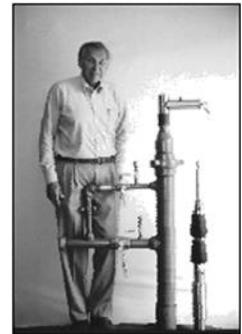
## Commercial Technologies Emerging from Stripper Well Consortium

by Gary Covatch, DOE's National Energy Technology Laboratory, Morgantown, WV.

Established in late 2000, the Stripper Well Consortium (SWC) now has three plus years of project work under its belt. In its first year funding projects (2001), the SWC funded 13 projects, followed by 13 projects in 2002, 13 projects in 2003, and another 10 in 2004. Technologies developed in some projects are winding their way to being commercialized, several of which are featured in the following article.

The goal of the SWC is to further development of technologies targeted to U.S. natural gas and oil stripper wells. Annually, the SWC reviews development proposals, making awards to those its industry-led Executive Council feels are most promising. The Pennsylvania State University manages the SWC ([www.energy.psu.edu/swc/index.html](http://www.energy.psu.edu/swc/index.html)). DOE's National Energy Technology Laboratory provides primary funding, with additional support from the New York State Energy Research and Development Authority. The proposal submittal and review process occurs early each calendar year and **is now open to all organizations**. Cost share contributions are required from those making proposals. Additional information on the proposal process can be found on the SWC website listed above.

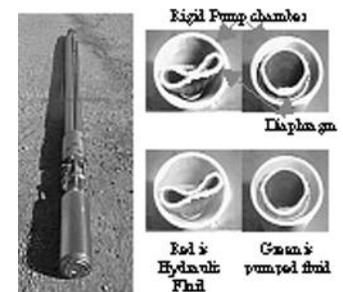
**Gas-Operated Automatic Lift (GOAL) PetroPump**—Brandywine Energy & Development Co. has developed a gas-operated automatic lift plunger lift tool to remove fluids from stripper wells. The system is unique in that it operates automatically using an on-tool pressure-activated valve preset to retrieve and deliver a fixed volume of fluid each run and then to automatically return to the wellbore for additional fluid when required. The tool has low maintenance and service requirements, which is generally limited to changing the cup seals after several months of operation. It is inexpensive to operate as it requires no external energy source and limited manpower. The tool operates in both 3" and 4" casing. For more information and pricing contact Paul Yaniga at 610-388-3824 or e-mail at [YanigaPM@aol.com](mailto:YanigaPM@aol.com).



**Vortex Flow Tools**—Vortex Flow, LLC has developed a revolutionary flow development chamber that takes a disorganized single or multiphase flow and transforms it to an organized helical flow. The vortex flow regime accelerates the velocity of water and reduces the friction that causes pressure drops as fluids flow through a pipe. The result is far greater efficiency when moving fluids. Seven different tools have now been developed. Test results have shown that the Vortex surface tools eliminate water build-up in low spots in flow and gas gathering lines, reducing upstream pressures. Over 200 Vortex surface tools have been installed in gas gathering and production flow lines across the US. The Vortex downhole DX tool is designed for installation at the bottom of the tubing and reduces the pressure drop up the tubing string, thereby reducing the gas flow needed to lift liquids up the wellbore. The Vortex Downhole DXR tool can be deployed via slickline through the tubing string and set downhole in a collar stop. For more information contact Brad Fehn at 720-227-0350 or e-mail at [bfehn@vortexflowllc.com](mailto:bfehn@vortexflowllc.com).



**Hydraulic Diaphragm Electric Submersible Pump**—Pumping Solutions, Inc. (now part of Smith Lift, LLC) has developed a new type of pump based on a hydraulic-driven diaphragm, which has proven to be tolerant of fines and has allowed placement of the pump inlet below the perforations in sandy wells. Its performance advantages include the following: pumps coal fines and solids at higher concentrations than traditional systems, pumps gas/liquid mixtures, pumps dry/off with no damage (within motor limits), pumps any viscosity (high or low), has constant output with depth, is efficient at low volumes, and is highly efficient with reduced electric costs. This pump is now being offered commercially by Smith Lift. For more information contact Paul Treaster at 505-239-4655 or e-mail at [ptreaster@smith.com](mailto:ptreaster@smith.com).

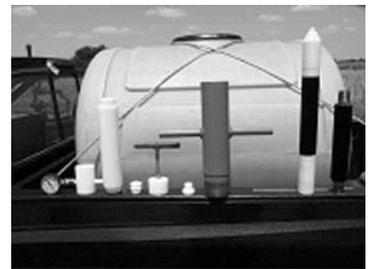




**Weatherbee Pump**—W&W Vacuum & Compressors, Inc. is developing a novel type of variable capacity compressor/pump for low productivity gas production operations. The new compressor has 4 rotating chambers, which provides 4 intake and 4 exhaust strokes in each 360 degree rotation. The pump has no wasted motion as two chambers are loading while two chambers are unloading. All of the pump volume is swept as there are no corners or "dead places" for fluid or pressure to get trapped. The pump has a capacity control mechanism which allows the flow rate of the device to be varied to meet increased or decreased demands without changing the rotation rate of the drive shaft. The pump functions equally well whether rotating clockwise or counterclockwise, can be mounted in any position without affecting normal operations and can handle high BTU gas. The pump is substantially smaller and lighter compared to existing products on the market. For more information contact Paul Weatherbee at 325-695-4637 or e-mail at [wildcatr@aol.com](mailto:wildcatr@aol.com).



**Chemical Injector for Plunger Lift Gas Wells**—Composite Engineers, Inc. has developed a simple, economical chemical system that requires no special tools to install, no service rig and no downtime. The Plunger-Conveyed Chemical System consists of a modified plunger identical to the one presently being used and a chemical chamber located on the top of the lubricator. The system has 5 moving parts, most of which are in the chemical chamber located on top of the well. Chemical applications can be adjusted just as with any other well being treated. A standard oilfield chemical pump charges the chemical chamber with any liquid chemical such as corrosion inhibitors, foaming agents or paraffin solvents or even a combination of chemicals, alternately. The modified plunger, i.e., pad, brush, wobble washer, solid or snake of any length, is available with this system. The entire system can be installed in about 15 minutes without special tools. The system does not change the plunger performance or well characteristics and is field proven and economical. For more information contact Sam Farris at 405-990-9728 or e-mail at [samfarris@compositeengineersinc.com](mailto:samfarris@compositeengineersinc.com).



**Oilfield Brine Desalination Trailer**—Texas A&M University has developed a mobile produced brine desalination unit to test onsite the efficiency of produced brine cleanup. The unit tests the performance of key processes used to cleanup the brine and measures electrical power usage, a major cost factor of reverse osmosis desalination. The desalination unit can process approximately 20,000 gallons of water per day and can recover from 2,000 gallons to 10,000 gallons of fresh water per day, depending on the salinity of the input feed water. Effective purification of impaired water requires the removal of contaminants in steps rather than at one time. The system utilizes a series of discrete cleaning steps, field proven in other industries, to purify the water. For more information contact Dave Burnett at 979-845-2274 or e-mail at [d-burnett@spindletop.tamu.edu](mailto:d-burnett@spindletop.tamu.edu).



**Low Cost Real Time Downhole Wireless Gauge**—Tubel Technologies, Inc. has developed a new downhole wireless gauge that addresses the needs of oil and gas producers for a simple system to automate and optimize the hydrocarbon production. The system eliminates cables, clamps and splices inside the wellbore, increasing reliability, lowering costs and reducing significantly the time required for deployment of the completion system in the well. The tool currently monitors temperature and pressure, but additional parameters can be added. This new technology can be used both in permanent and service applications. For example, in frac service applications, the wireless gauge provides pressure and temperature data in real time allowing the operator to adjust its frac parameters during the job to prevent formation damage and to optimize the frac process. For permanent applica-





tions, the system is able to stay in the wellbore for 3 years with a single battery pack (6 years with 2 packs) and provide real time data for pump monitoring to optimize and automate the production process to reduce lifting costs and pump downtime. The wireless gauge can also provide reservoir evaluation with formation buildup tests to optimize production and maximize the amount of hydrocarbon that can be extracted from the wellbore. For more information contact Paul Tubel at 281-364-6030 or e-mail at [paul.tubel@tubeltechnologies.com](mailto:paul.tubel@tubeltechnologies.com).

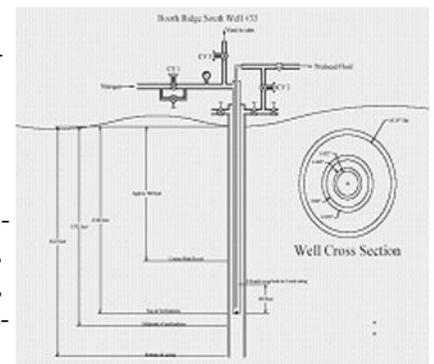
**METEOR**—Advanced Resources International has developed a new reservoir performance tool, designed especially for fractured, low permeability gas production. The tool is designed for fast analysis to help locate underperforming wells and diagnose their problems. Its technical features extend far beyond traditional decline curve programs. METEOR will interface with one's own production database; forecast production using Arps, Fetkovich or variable compressibility decline curves; calculate permeability, skin or fracture half-length, drainage area and reservoir pressure; evaluate wells with multiple completions for layered-no-crossflow behavior; investigate options for compression, restimulation, artificial lift or infill drilling; and determine EUR and reserves. For more information contact George Koperna at 703-528-8420 or e-mail at [gkoperna@adv-res.com](mailto:gkoperna@adv-res.com).



**Engineering Decision Tree Forms**—James Engineering, Inc. has developed a series of procedure guides using decision tree forms which can help operators improve production from their stripper wells. The first is a low cost methodology which analyzes and suggests corrective actions for stripper wells experiencing abnormal production decline. The second details cost effective fluid removal options and the third identifies cost effective corrosion mitigation procedures. Each guide includes a set of forms to be filled out by both the well tender and the engineer, which aides in the remediation decision process. For more information contact Tim Knobloch at 740-373-9521 or e-mail at [jeitsk@charter.net](mailto:jeitsk@charter.net).



**Intermittent Gas Chamber Lift**—The Pennsylvania State University is developing a new production system for low volume oil and gas wells as an alternative to conventional lift systems such as rod pumping. The chamber lift process involves the injection of gas into the oil column via a small diameter tubing string that is set in the production tubing. The gas then displaces the accumulated fluid to the surface via the annular space between the injection string and the production string. The process is controlled using a sensor and motor valve located at the surface. The new system uses newer types of materials for tubulars to minimize costs and be more maintenance free of corrosion and wear, adapts to less labor intensive procedures for repair, has minimal downhole moving parts, is easily converted from current rod pump system, minimizes well "foot print," and minimizes mechanical and electrical equipment at well site. Penn State is working with Bretagne to field test the system in eastern Kentucky. Ongoing work includes the development of a simplified controller specific to the chamber lift system that can be manufactured at a very economical cost to the independent producer and selection and implementation of Polytube pipe for the downhole tubular material. For more information contact Dr. Bob Watson at 814-865-0531 or e-mail at [rw1@psu.edu](mailto:rw1@psu.edu).



For more information on other projects or the Stripper Well Consortium in general, visit the SWC website at [www.energy.psu.edu/swc](http://www.energy.psu.edu/swc) or contact either Joel Morrison, SWC Director, 814-865-4802 or e-mail at [swc@ems.psu.edu](mailto:swc@ems.psu.edu) or Gary Covatch, DOE Project Manager, at 304-285-4589 or e-mail at [gary.covatch@netl.doe.gov](mailto:gary.covatch@netl.doe.gov).



## DOE Sequestration Partnerships Expanding

DOE recently announced that seven new states and 13 organizations have joined the Carbon Sequestration Regional Partnership Program. DOE's Partnership Program is a nationwide network of federal, state, and private sector partnerships that are determining the most suitable technologies, regulations, and infrastructure for future carbon capture, storage and sequestration in different areas of the country.

Seven original partnerships were selected in August 2003 ([www.pttc.org/news/3qtr2003/v9n3p10.htm#4](http://www.pttc.org/news/3qtr2003/v9n3p10.htm#4)), which now include 154 organizations spanning 40 states, three Indian nations, and two Canadian provinces. The three partnerships adding new participants are:

**Southeast Regional Carbon Sequestration Partnership**—The states of Virginia and Texas became part of the Southeast Regional Carbon Sequestration Partnership in March, joining Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee. The state of Texas, already a member of the Southwest Regional Partnership for Carbon Sequestration, is now part of two partnerships. The focus of the Southeast Partnership in Texas will be carbon capture and sequestration opportunities in the Gulf Coast area.

**Plains CO<sub>2</sub> Reduction Partnership**—The Plains CO<sub>2</sub> Reduction Partnership also expanded with the addition of Nebraska, Iowa, Missouri, and Wisconsin. These states join the existing states of Montana, Wyoming, North Dakota, South Dakota and Minnesota, as well as partners from industry and academia. The partnership is led by the Energy & Environmental Research Center at the University of North Dakota. Other new members to this partnership are Ducks Unlimited Canada and the Institute for Wetland and Waterfowl Research Northern Prairie Wildlife Research Center.

**Midwest Regional Carbon Sequestration Partnership**—Michigan and Maryland have joined Indiana, Ohio, Kentucky, West Virginia, and Pennsylvania to expand the Midwest Regional Carbon Sequestration Partnership. In addition, nine organizations have joined the partnership—Michigan State University, the University of Maryland, Western Michigan University, the Maryland

Geologic Survey, AES Warrior Run Power Plant, the Maryland Energy Administration, DTE Energy, Alliance Resources Partners, and Constellation Energy.

Further information available in DOE's Tech Line ([www.fe.doe.gov/news/techlines/2004/tl\\_regional\\_partnerships.html](http://www.fe.doe.gov/news/techlines/2004/tl_regional_partnerships.html)).♦

## NEW DOE Projects Address Produced Water & Federal Lands Issues

DOE recently announced nine new projects, totaling \$10 million, addressing federal lands and produced water issues. Projects by the Groundwater Protection Research Foundation and Interstate Oil and Gas Compact Commission (IOGCC) are part of the federal lands spotlight and involve data exchange and analysis between federal, state and local government agencies. They are geared to streamline the data management process. The other seven projects target produced water.

- **Groundwater Protection Research Foundation**—integrate state-collected environmental data with the U.S. Bureau of Land Management lease stipulation data and oil and gas reserves inventories.
- **IOGCC**—faster and more comprehensive access to existing oil and gas data.
- **Colorado School of Mines**—produced water management from production through treatment and beneficial use. Includes enhanced CBM, hydrogeology and soil science in Powder River Basin.
- **IOGCC**—best management practices for produced water handling. Evaluate produced water management from a holistic standpoint, including beneficial use, water resource impacts, pre-release treatment, and regulatory issues.
- **New Mexico Tech**—new reverse osmosis technology to efficiently treat the high total dissolved salts in produced water.
- **Oklahoma State University**—field data to learn the true potential for environmental effects and whether existing discharge standards are appropriate.

- **Texas A&M University, Texas Engineering Experiment Station**—cleaning agents and new practices to remove plugging materials and to restore micro-filter and reverse osmosis membrane performance.
- **University of Texas (Austin)**—explore new alternatives to purify produced water.
- **University of Texas (Austin)**—field test of a prototype surfactant-modified zeolite treatment system for removing dissolved organics from produced water.

Further information on the awards and individual projects available online ([www.fe.doe.gov/news/techlines/2004/tl\\_oilgas\\_awards\\_081604.html](http://www.fe.doe.gov/news/techlines/2004/tl_oilgas_awards_081604.html)).♦

## Initial Projects Selected in Gas Storage Technology Consortium

The DOE-supported, recently formed Gas Storage Technology Consortium (GSTC), [www.energy.psu.edu/gstc/](http://www.energy.psu.edu/gstc/), has as its primary focus demonstration of technologies to preserve and improve the deliverability and management of existing conventional storage reservoirs and salt cavern facilities. A secondary focus will be on researching manmade storage systems and other non-traditional methods in close proximity to demand centers. Membership levels include full member, affiliate members (associations, professional societies, etc.) and university members. Robert Watson with Pennsylvania State University directs the Consortium.

Competition for 2004-2005 funding recently occurred and GSTC announced the following six winners:

- **Correlations Co.**—"Smart Gas: Using Chemicals To Improve Gas Deliverability"
- **West Virginia University**—"Gas Storage Field Deliverability Enhancement and Maintenance"
- **Kinder Morgan**—"Deliverability Enhancement for Gas Storage Wells"
- **Colorado Engineering Experiment Station Inc.**—"Evaluation of Separators for Gas Storage Fluid Control"
- **Colorado School of Mines**—"Low-Cost Downhole Pressure Monitoring"
- **Clemson University**—"Produced Water Cleanup Using Hybrid Constructed Wetland Technology"

Take A Brief On-Line Survey About DOE's Oil Program R&D and Tech Transfer Program - logon to:

[www.gelbresearch.com/cgi-bin/qweb.cgi?idx=3JPPG6A&rak=UID](http://www.gelbresearch.com/cgi-bin/qweb.cgi?idx=3JPPG6A&rak=UID)



Further information about GSTC and the initial project awards is available online ([www.energy.psu.edu/gstc/index.html](http://www.energy.psu.edu/gstc/index.html)). ♦

## Unconventional Gas, Fractured Reservoirs and Infill Drilling

DOE recently announced that New Mexico Tech has completed a five-year study for optimization of infill drilling in naturally fractured tight gas reservoirs for the San Juan Basin. Their final report indicates that optimal infill drilling could increase gas recovery anywhere from 23 to 46 percent. In the San Juan Basin well/reservoir productivity varies greatly. Natural fractures and their associated reservoir permeability and permeability anisotropy influence drainage efficiency and infill well potential.

The study generated a wealth of information about optimizing infill drilling and developed a simple to use Infill Well Location Calculator (<http://octane.nmt.edu/software/Infill.asp>) designed specifically for small independents. The study also demonstrated a methodology to define the elliptical drainage area and recoverable gas for existing wells, evaluate hydraulic fracture simulation treatments and their impact on well drainage area and infill well potential, determine the optimal location and number of new infill wells to maximize economic recovery, and forecast the increase in total cumulative gas production from infill drilling.

Following an initial small-scale study of the Blanco Mesaverde reservoir with one operator, New Mexico Tech began working with other producers in 1998 through a cooperative agreement with DOE. They conducted a basin-wide study for both the Mesaverde and Dakota formations. The objective of this project was to develop a methodology to determine optimum well spacing, patterns, and type (vertical or horizontal) to maximize gas recovery from naturally fractured tight gas reservoirs.

Burlington Resources and BP were granted permission to site new well locations based on drainage area and drainage pattern of previously drilled wells. Typically, wells are drilled on a given well spacing and pattern (usually square) specified by the regulatory agency. For certain formations, gas operators have been able to convince the commission to reduce well spacing so that additional reserves could be produced. This was the first

approved deviation in the Mesaverde tight gas sandstone reservoirs in the San Juan Basin, and the approval was a direct result of this project.

Several independent gas operators have approached New Mexico Tech to conduct a similar study without federal funding in other Rocky Mountain basins. One such study is with Occidental Oil and Gas to develop a tight-gas play in the Piceance Basin in Colorado. Occidental is funding a fourteen-well pilot program planned for next year and is negotiating to have New Mexico Tech do the fracture analysis, interpret well tests and production data, and conduct some reservoir modeling.

For further information, contact DOE's Jim Ammer (phone 304-285-4383, email [jammer@netl.doe.gov](mailto:jammer@netl.doe.gov)). ♦

## Tech-Oriented Newsletters from DOE

- *GasTIPS*: A quarterly publication, produced in partnership between the Strategic Center for Natural Gas & Oil and the Gas Technology Institute, that highlights natural gas technology research in the gas exploration, production, and processing areas.
- *Fire in the Ice*: A quarterly publication highlighting the National Methane Hydrate R&D Program
- *Class Act*: A publication highlighting DOE's Reservoir Class Program
- *Eye on Environment*: A publication highlighting DOE's Oil and Gas Environmental Research Program

Log on to [www.netl.doe.gov/scngo/index.html](http://www.netl.doe.gov/scngo/index.html). ♦

## New Permian Basin "Major Oil Reservoir" Play Analysis, Digital Portfolio

Researchers at the Bureau of Economic Geology, the University of Texas at Austin, and the New Mexico Bureau of Geology and Mineral Resources have completed a new digital oil-play portfolio of the major Permian Basin oil reservoirs. The portfolio was developed as part of DOE's Preferred Upstream Management Practices Program.

The portfolio defines 32 oil plays in the Permian Basin and assigns all reservoirs that had cumulative production of > 1 million barrels through 2000 to a play. Each of the 1,339 reservoirs was mapped in a GIS system. The portfolio contains a summary description of each play including illustrations of key reservoir characteristics and reservoir data tables. This new portfolio updates and expands the information in the pioneering volume *Atlas of Major Texas Oil Reservoirs* (Galloway and others, 1983), which included only reservoirs in the Texas part of the Permian Basin that had produced more than 10 million barrels of oil.

The draft final report (pdf format) to DOE, the reservoir database (Excel format), and PDF versions of the play maps are available online at [www.beg.utexas.edu/resprog/permianbasin/playanalysis.htm](http://www.beg.utexas.edu/resprog/permianbasin/playanalysis.htm). The report will be published as a BEG Report of Investigations on a CD-ROM containing the database of reservoirs within each play, maps in Geographic Information Systems (GIS) format showing play outlines and reservoir locations, and summary information on reservoir heterogeneity and development practices. ♦

## Microhole Technology Development II Closes Oct. 6, 2004

DOE is seeking proposals for its Microhole Technology Development II solicitation scheduled to close Oct. 6, 2004. FIELD DEMONSTRATION proposals should demonstrate drilling well(s) using coiled tubing (MHT) drilling technology. Proposals must meet several conditions. One award—up to \$1,000,000 of DOE money (50% cost share required)—is anticipated for drilling of at least three wells during a one-year period. TECHNOLOGY DEVELOPMENT proposals should address developing new tools in the areas of advanced monobore concepts, microhole coiled tubing bottom hole assemblies, and microhole completion and production equipment. Multiple awards are anticipated in each area. Projects should take no more than three years. Being development rather than demonstration, only 20% cost share is required.

Full solicitation information available on DOE NETL's website [www.netl.doe.gov/business/solicit/index.html](http://www.netl.doe.gov/business/solicit/index.html). ♦



### Interview with Thomas E. Williams, Vice President of Maurer Technology

*From your perspective of having been heavily involved in applied R&D and technology commercialization in a variety of roles, what are the most prominent barriers you see to (1) newly developed technology quickly becoming adopted and (2) needed future technology being developed?*

There have been a number of incremental improvements over existing technology that our industry has developed—in conjunction with end users—for specific needs that were quickly developed and adopted. Necessity truly is the mother of invention. For example, it is mind-boggling how rapidly technology has advanced in deep water drilling in a relatively short period of time. However, this is typically not the case in our industry with the advances that occur in most applied R&D, especially when it requires doing something different. Most people hate to change their approach unless it has been conclusively proven it will save them money.

Demonstration is the key to any successfully applied R&D project. Technology developers are required to demonstrate it, change it, demonstrate it, fix it, demonstrate it, improve it, sometimes over and over again. Corporate and government funding for most R&D projects doesn't make provision for this trial and error process. This means that the first guy may never get it past the first test (which rarely goes right), and the second or third guy may get lucky. This could take years. The technology developer, the service company (who will commercialize and provide the technology), and the end user must be willing to cooperate, or many very good ideas will never get past the reporting stage. This is the reason the potentially high-impact, high-risk projects never get beyond the first prototype. The U.S. government R&D programs are not well funded (unlike the situation in many

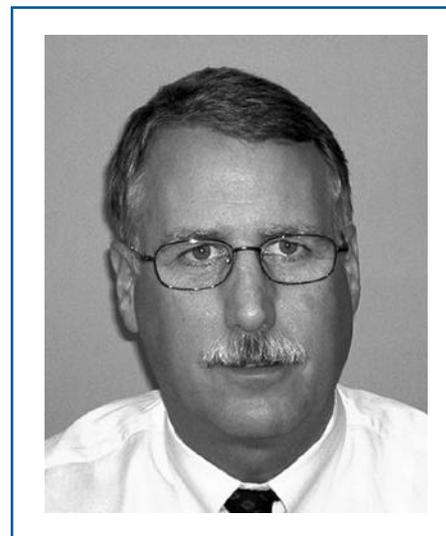
other oil/gas producing countries), and there are restrictions on the amount of risk money they can spend on the demonstration stage. The Department of Energy and the Minerals Management Service (to a lesser degree) are working with industry to fund R&D to more cost effectively and safely drill and produce in environmentally sensitive areas and in deep high-temperature high-pressure reservoirs. These applications are very high risk, but in my opinion offer potential rewards to well justify the R&D investments.

*In each of these cases, what could industry do differently to increase the probability of technologies being there for independents to apply in the future?*

Many independents—typically not bound by corporate and legal barriers—will try darn near anything in exploration. But when it comes to operations and production, they want their technologies well proven. They simply don't have the R&D dollars, don't want to spend the time, or don't want to incur the risks associated with demonstration projects.

But someone must still objectively demonstrate new technologies and prove their economics in the field. The smaller technology developers and service companies (who in my opinion have been the real innovators in our industry) are limited in their resources and the ability to test and demonstrate in field conditions. This is all necessary to either get the right partner or end user committed for commercialization of their new technology. There is a graveyard of potentially enabling technologies that have just not been proven to the industry's satisfaction.

It is very important to have oil field test facilities available like Catoosa and DOE's Rocky Mountain Oilfield Testing Center that can



provide full-scale testing and demonstration of new tools, equipment, and technologies. Many of the majors previously had their own wells, flow loops, and oil field demonstration centers, but they disappeared along with their R&D laboratories. Most of the largest service companies have world class test facilities and test wells for their own products, and there are a few private laboratories available with experts who can assist in avoiding the mistakes of those who came before.

In short, the answer to your question—the industry could do two things; first, operators should consider providing opportunities for new demonstration projects (and then be patient); and second, they should ask Congress and ask their oil and gas associations to ask Congress to provide more funding that closes the gap between Research, Development, Demonstration, and Commercialization. ♦

**Thomas E. Williams** is Vice President of Maurer Technology, a division of Noble Technology Services, and a wholly owned Noble Corporation subsidiary. Tom joined Maurer Engineering in 2000 as Vice President of Business Development prior to the sale of the company to Noble Drilling Corporation in 2001. Tom held Senior Executive Positions at the U.S. Departments of Energy (DOE) and Interior during the (Sr.) Bush Administration from 1989 to 1993. From 1993 to 2000, he was Business Development Director at Westport Technology Center in Houston, a leading upstream oil and gas research company. Tom is the co-founder and served on the Board of Directors of Cementing Solutions, Inc., a successful oil and gas cementing services and technology company. He has been in the oil and gas industry for over 20 years, having owned and operated an oil and gas exploration, production and consulting company prior to joining the DOE. Tom has authored more than 100 energy publications and articles and serves on a number of oil and gas organizations, associations and boards including the Independent Petroleum Association of America (IPAA), PTTC's Texas Region Producer Advisory Group, the Texas Independent Producers and Royalty Owners Association (TIPRO), the Society of Petroleum Engineers, American Association of Drilling Engineers, DeepStar Consortium Contributors Advisor Board, Far East Energy Corporation and others.



**PTTC Tech Info**

**Solutions from the Field:**

Online Technologies to Solve Problems Faced by Independent Producers

Summaries of PTTC region- sponsored workshops. For summaries of more than 100 workshops (of more than 1,000 conducted) and for a listing of the workshops held, logon to: [www.pttc.org](http://www.pttc.org) or for more details, contact 1-888-THE-PTTC, e-mail: [hq@pttc.org](mailto:hq@pttc.org).

**Horizontal Drilling, A Technology Update for the Appalachian Basin** — Based on a workshop co-sponsored by PTTC's Appalachian Region, the Ohio Oil and Gas Association and Ohio Geological Society, May 27, 2004 in Cambridge, OH

**Understanding the Trenton-Black River Reservoir** — Based on a workshop co-sponsored by PTTC's Appalachian Region, The Appalachian Oil and Natural Gas Research Consortium, and West Virginia Geological & Economic Survey, held on June 7, 2004 in Washington, PA

**Polymer and Polymer-Gel Water Shutoff Treatments; What It Takes To Be Successful and Illustrative Field Applications** — Based on a workshop sponsored by PTTC's Texas Region, August 25, 2004 in Houston, Texas.

**American Oil and Gas Reporter Tech Connection Column**

**September**

Training Programs Help Ensure The Manpower Industry Needs

**August**

Information Exchange Helps Producers Understand Trenton-Black River

**July**

California Program Demonstrates Value of Cutting Power Consumption

**3rd Quarter 2004 Case Studies Petroleum Technology Digest**

**Air hammers cut Barnett Shale drilling time in half**

**Automated casing swab pump increases marginal gas well production**

**Water control becomes economically attractive to L.A. basin operators**

Petroleum Technology Digest is a joint project of Gulf Publishing (*World Oil*) and PTTC. See case studies online at [www.pttc.org/case\\_studies/case\\_studies.htm](http://www.pttc.org/case_studies/case_studies.htm). Contact [leole@pttc.org](mailto:leole@pttc.org).

**CONTACT THE PTTC REGIONAL RESOURCE CENTER IN YOUR AREA:**

**Appalachian Region**  
Director: Doug Patchen  
West Virginia University  
304-293-2867, ext. 5443  
Coordinator: Mark Hoffman, 304-293-2867 Ext. 5446  
[www.karl.nrcce.wvu.edu](http://www.karl.nrcce.wvu.edu)

**Central Gulf Region**  
Director: Bob Baumann,  
Louisiana State University  
225-578-4400  
Coordinator: Don Goddard, 225-578-4538  
[www.cgprttc.lsu.edu](http://www.cgprttc.lsu.edu)

**Eastern Gulf Region**  
Director: Ernest Mancini  
University of Alabama  
205-348-4319  
Coordinator: Bennett Bearden, 205-348-1880  
<http://egrpttc.geo.ua.edu>

**Midwest Region**  
Director: David Morse  
Illinois State Geological Survey  
217-244-5527  
Coordinator: Steve Gustison, 217-244-9337  
[www.isgs.uiuc.edu/pttc](http://www.isgs.uiuc.edu/pttc)

**North Midcontinent Region**  
Director: Rodney Reynolds  
Kansas University  
Energy Research Center  
785-864-7398  
Coordinator: Dwayne McCune, 785-864-7398  
[www.nmcppttc.org](http://www.nmcppttc.org)

**Rocky Mountain Region**  
Director: Sandra Mark  
Colorado School of Mines  
303-273-3107  
[www.pttcrockies.org](http://www.pttcrockies.org)

**South Midcontinent Region**  
Director: Charles Mankin  
Oklahoma Geological Survey  
405-325-3031  
Coordinator: Michelle Summers, 405-325-3031  
[www.ogs.ou.edu/pttc.htm](http://www.ogs.ou.edu/pttc.htm)

**Southwest Region**  
Director: Robert Lee,  
Petroleum Recovery Research  
Center, 505-835-5408  
Coordinator: Martha Cather, 505-835-5685  
<http://octane.nmt.edu/sw-pttc>

**Texas Region**  
Director: Scott Tinker,  
Bureau of Economic Geology  
University of Texas at Austin  
512-471-0209  
Coordinator: Sigrid Cliff, 512-471-0320  
[www.energyconnect.com/pttc](http://www.energyconnect.com/pttc)

**West Coast Region**  
Director: Iraj Ershaghi  
University of Southern California  
213-740-0321  
Coordinator: Idania Takimoto, 213-740-8076  
[www.westcoastpttc.org](http://www.westcoastpttc.org)

**Michigan Satellite**  
William Harrison III, W. Mich. Univ.  
269-387-5488  
<http://wst023.west.wmich.edu/pttc.htm>

**Permian Basin**  
Bob Kiker, UTPB CEED  
432-552-3432  
[www.energyconnect.com/pttc/pb/](http://www.energyconnect.com/pttc/pb/)

**Alerts Via E-Mail: Another PTTC Service**

	<b>PTTC Highlight</b>	<b>Industry Highlight</b>	<b>DOE Highlight</b>
Sept. 2	CBM Insights—An Online CBM Symposium	Liquid Ring Field Compressors, Simple & Rugged	Nine Awards, \$10 Million Addressing Production/Environmental Issues
Aug. 13	Presentations from Selected PTTC Workshops Available Online	CBM Production Logging	Digital Play Portfolio for Permian Basin
July 22	North Dakota CO2 Flooding Potential	Using Fiber Optics For Downhole T/P Sensing	Meeting Future Natural Gas Demand in South-Central Alaska
July 1	Student Education/ Internships in California & The Rockies	Free Subscriptions to <i>World Oil</i>	O&G-Related News Alerts

# PTTC

is pleased to be part of

## ipaa's 75<sup>th</sup> Annual Meeting & Emerging Technology Conference

October 25-28 ★ Hilton Hotel ★ Austin, Texas

October 25-27

### Annual Meeting Highlights

- ★ The Honorable J. Bennett Johnston
- ★ Raoul Restucci - Shell Exploration & Production
- ★ Brian Frank - BP Canada Energy Co.
- ★ Michael Stice - ConocoPhillips
- ★ Duane Radtke - Dominion Exploration & Production
- ★ Shannon Nome - JPMorgan Chase
- ★ James Wicklund - Banc of America Securities
- ★ Tony Blankley - Political Commentator

75<sup>th</sup> annual meeting  
**the future**  
of natural gas

October 28

### Emerging Technology Conference Highlights

*Meeting Challenges in Finding and Producing  
Unconventional Natural Gas*

- ★ Guido deHoratiis - Department of Energy
- ★ Dr. Scott Tinker - Bureau of Economic Geology, UT
- ★ William Marble - Hallwood Energy
- ★ Michael Gatens - MGV Energy Inc.
- ★ Ron Hogan - Questar E & P
- ★ Bruce Williams - Fidelity Exploration & Production Co.
- ★ Halliburton, Schlumberger, BJ Services & Baker Hughes
- ★ Brook Phifer & Don Duttlinger - PTTC
- ★ Jeffrey Eppink - Advanced Resources International

**10<sup>th</sup> Annual CO<sub>2</sub> Flooding Conference**

When:  
December 7-10, 2004

Where:  
Midland, Texas, USA

*EOR Carbon Management Workshop* - Tuesday, December 7, 8 am to 5 pm & continued through Wednesday, December 8, 8 am to 12:00 Noon

*CO<sub>2</sub> Health and Safety Shortcourse (Shortcourse #12)* - Wednesday, December 8, 8 am to 12:00 Noon

*CO<sub>2</sub> Flood Surveillance, Case Histories and Lessons (Shortcourse #4a)* - Wednesday, December 8, 8 am to 12:00 Noon

*CO<sub>2</sub> Flood Case History Theme Sessions* - Thursday, December 9, 8 am to 5 pm & Friday, December 10, 8 am to 12:30 pm

For more information or to register, logon to:  
[www.utpb.edu/ceed/co2/index.html](http://www.utpb.edu/ceed/co2/index.html)

Don't let this opportunity pass you by...



## Make plans now to attend the 1st Midcontinent Coalbed Methane Symposium

- Nov. 7-9, 2004 - Tulsa, OK -

### Symposium Includes:

- Great Opportunities to Network
- Exhibitors Showcasing the Latest Technologies
- CBM Exploration & Development Short Course - Dr. Shahab Mohaghegh
- Full day of Presentations on the latest CBM activities in Arkansas, Kansas and Oklahoma
- Field Trip to outcrops and operations in Oklahoma

### For Hotel Reservations and Symposium Rate (\$89/night):

Contact the Crowne Plaza in Tulsa at 1-800-227-6963 and mention CBM. Reservations at Symposium rate must be placed prior to Oct. 24, 2004.

**Call Now!**

*Exhibitor Booths & Sponsorships Still Available*

For more information or to register, please contact  
Kim Kohler at 405-942-2334 ext. 215 or by e-mail at  
[kkohler@oipa.com](mailto:kkohler@oipa.com) or log onto [www.nmcpptc.org/CBM/](http://www.nmcpptc.org/CBM/).



PTTC's low-cost regional workshops connect independent oil and gas producers with information about various upstream solutions. For information on the following events, that are sponsored or co-sponsored by PTTC, call the direct contact listed below or 1-888-THE-PTTC. Information also is available at [www.pttc.org](http://www.pttc.org). Please note that some topics, dates, and locations listed are subject to change.

### October 2004

- 10/6 Appalachian: *Exploration and Development of Fractured Reservoirs* (AAPG Eastern Section) - Columbus, OH. Contact: 304-293-2867 ext 5446
- 10/6 Eastern Gulf: *2004 O&G Forum & Technology workshop; Miocene of Mississippi and Alabama* (U.S. O&G Association) - Jackson, MS. Contact: 205-348-1880
- 10/6 Rocky Mountain: *What's New in Logging Measurements and Techniques* (SPE Casper) - Casper, WY. Contact: 303-273-3107
- 10/7-8 Rocky Mountain: *GeoPlus PETRA for Beginners* - Golden, CO. Contact: 303-273-3107
- 10/12 Midwest: *Pumpers and Well Operators Training* (Illinois O&G Association) - Mt. Carmel, IL. Contact: 217-244-9337
- 10/14 North Midcontinent: *Crash Course in Log Analysis, An Excel Spreadsheet Workshop* - Lawrence, KS. Contact: 785-864-7398
- 10/15 North Midcontinent: *PfEFFER Log Analysis Software* - Lawrence, KS. Contact: 785-864-7398
- 10/15 Rocky Mountain: *Forward & Inverse Seismic Structural Modeling with Divestco's Outrider Software* - Golden, CO. Contact: 303-273-3107
- 10/21 Central Gulf: *Understanding the Oil and Gas Reservoir Using Material Balance* - Lafayette, LA. Contact: 225-578-4538
- 10/21 West Coast: *Coiled Tubing Application and Operations* - Valencia, CA. Contact: 213-740-8076
- 10/21 Rocky Mountain: *GeoPlus PETRA, Cross Section Techniques for Intermediate Users* - Golden, CO. Contact: 303-273-3107
- 10/21 Appalachian: *Well Safety for Well Tenders* - Marietta, OH. Contact: 304-293-2867 ext 5446
- 10/21-23 South Midcontinent: *Stratigraphic and Structural Evolution of the Quachita Mountains and Arkoma Basin; Applications to Petroleum Exploration* (University of Oklahoma, Oklahoma State University) - Poteau, OK. Contact: 405-325-3031
- 10/22 Rocky Mountain: *GeoPlus PETRA, Engineering Tools for Intermediate Users* - Golden, CO. Contact: 303-273-3107
- 10/26 Texas: *Seismic Structure Modeling Software Using Divestco's Software* (Ellison Miles Geoscience Center, Divestco) - Farmers Branch, TX. Contact: 512-471-0320
- 10/28 PTTC/IPAA Tech Session @ IPAA Annual Meeting - Austin, TX. [www.pttc.org](http://www.pttc.org)
- 10/28 Texas: *Tech Session @ PBPA annual meeting* - Midland, TX. Contact: 432-552-3432
- 10/28-29 Eastern Gulf: *Alabama O&G Seminar* (Alabama State O&G Board, Black Warrior Assn Landmen, O&G Section of Alabama State Bar) - Tuscaloosa, AL. Contact: 205-348-1880
- 10/TBD South Midcontinent: *Lunch and Learn* (SPE Fort Smith, Arkansas Oil and Gas Commission) - Fort Smith, AR. Contact: 405-325-3031

### November 2004

- 11/2 South Midcontinent: *Upgrading of Downhole Pumping Equipment* - El Dorado, AR. Contact: 405-325-3031
- 11/3 Texas: *Unconventional Gas Reservoirs Seminar* (Ellison Miles Geoscience Center) - Farmers Branch, TX. Contact: 512-471-0320
- 11/7-9 North/South Midcontinent: *1st Annual Midcontinent Coalbed Methane Symposium* (Oklahoma Independent Petroleum Association, Midcontinent Coalbed Methane Forum) - Tulsa, OK. Contact: Kim Kohler, 405-942-2334 ext 215
- 11/8 Southwest/Texas: *Data Gathering Techniques and Interfaced Production Accounting* - Midland, TX. Contact: 505-835-5685
- 11/9 Southwest/Texas: *Data Gathering Techniques and Interfaced Production Accounting* - Artesia, NM. Contact: 505-835-5685
- 11/10 Central Gulf: *Well Abandonment Methods and Regulations* - Lafayette, LA. Contact: 225-578-4538
- 11/10 Texas: *Essentials of Subsurface Mapping* (South Texas Geological Society) - San Antonio, TX. Contact: 512-471-0320
- 11/11 Southwest: *Data Gathering Techniques and Interfaced Production Accounting* - Farmington, NM. Contact: 505-835-5685
- 11/15 Rocky Mountain: *Hydrothermal Dolomite Conference* (Rocky Mountain Association of Geologists, CSM SEG Chapter) - Golden, CO. Contact: 303-273-3107
- 11/16 North Midcontinent: *Practical Petroleum Reservoir Characterization and Modeling Using Free Web-based Software Tools* (Kansas Geological Survey) - Lawrence, KS. Contact: 785-864-4445
- 11/17 Midwest: *Annual Illinois Basin Coalbed Methane Symposium* (Illinois Geological Survey) - Evansville, IN. Contact: 217-244-9337
- 11/18 West Coast: *Sand Control* - Valencia, CA. Contact: 213-740-8076
- 11/TBD South Midcontinent: *Lunch and Learn* (SPE Fort Smith, Arkansas Oil and Gas Commission) - Fort Smith, AR. Contact: 405-325-3031
- 11/TBD Rocky Mountain: *GeoPlus PETRA, Mapping and Display Techniques* - Golden, CO. Contact: 303-273-3107
- 11/TBD Rocky Mountain: *Hydraulic Fracturing* - Vernal, UT. Contact: 303-273-3107

### December 2004

- 12/2 Central Gulf: *Reservoir Engineering Symposium; From the Matrix to the Market, What You Don't Know Can Hurt You* (University of Louisiana Lafayette) - Lafayette, LA. Contact: 225-578-4538
- 12/3 West Coast: *Waterflood Enhancement and Management* - Los Angeles, CA. Contact: 213-740-8076
- 12/9 Midwest: *Crash Course in Log Interpretation* - Greyville, IL. Contact: 217-244-9337
- 12/9-10 Texas/Southwest: *2004 CO<sub>2</sub> Conference* (Center for Energy and Economic Diversification, SPE Permian Basin, 8 industry) - Midland, TX. Contact: 432-552-3432
- 12/15 Texas: *Stranded Gas and Power Cost Reduction* - Midland, TX. Contact: 432-552-3432

# PTTC's National Board of Directors Guided by Independents for Independents

Interested in participating at the regional level? Call 1-888-THE PTTC

**PTTC Network News** is a quarterly publication of the Petroleum Technology Transfer Council (PTTC). PTTC makes no claims and shall not be held responsible for any of the information herein. No specific application of products or services is endorsed or recommended by PTTC. Reasonable steps are taken to ensure the reliability of sources for information that PTTC disseminates; individuals, companies, and organizations are solely responsible for the consequence of its use. Second-class postage is paid in Houston, TX.

#### PTTC Network News Staff:

**E. Lance Cole** Technical Editor  
**Kristi Lovendahl** Editor

#### PTTC Headquarters Staff:

**Don Duttlinger** Executive Director  
**E. Lance Cole** Project Manager  
**Kathryn Chapman** Director of Business Affairs

Phone: 281-921-1720  
Fax: 281-921-1723  
Call toll-free: 1-888-THE-PTTC  
E-mail: [hq@pttc.org](mailto:hq@pttc.org)

Copyright ©2004

Petroleum Technology Transfer Council

Permission is given to photocopy all or part of this publication with appropriate credit.

Visit our Web site at  
[www.pttc.org](http://www.pttc.org)

Postmaster, send change of address to:

**PTTC Publications**  
16010 Barkers Point Lane, Suite 220  
Houston, TX 77079

Position	Name	Affiliation	City/State
Chairman	Brook Phifer	NiCo Resources, LLC	Littleton, CO
Vice Chairman	Brian Sims	Independent	Madison, MS
Immed. Past Chairman	James Bruning	Bruning Resources, LLC	Ft. Smith, AR
Appalachian	Bernie Miller	Miller Energy Technologies	Lexington, KY
Central Gulf	Joe Jacobs	Gas Masters of America, Inc.	Monroe, LA
Eastern Gulf	Brian Sims	Independent	Madison, MS
Midwest	Richard Straeter	Continental Resources of IL	Mount Vernon, IL
North Midcontinent	Mark Shreve	Mull Drilling Co., Inc.	Wichita, KS
Rocky Mountain	Robert McDougall	Westland Energy Inc.	Cody, WY
South Midcontinent	A. M. "Mac" Alloway	Tony Oil Company	Tulsa, OK
Southwest	David Boneau	Yates Petroleum Corp.	Artesia, NM
Texas	Gene Ames III	The Nordan Trust	San Antonio, TX
West Coast	Mark Kapelke	Tidelands Production Co.	Long Beach, CA
AAPG	Eddie David	David Petroleum Corp.	Roswell, NM
IOGCC	John King	Michigan Public Service Comm.	Lansing, MI
IPAA	Steve Layton	E&B Natural Resources	Bakersfield, CA
SEG	Hugh Rowlett	ConocoPhillips	Houston, TX
SPE	Ken Oglesby	Oak Resources Inc.	Tulsa, OK
Large E&P Companies	Robert Lestz	ChevronTexaco	Houston, TX
Service Companies	Jay Haskell	Schlumberger Oilfield Services	Houston, TX
Regional Lead Orgs.	David Morse	Illinois Geological Survey	Champaign, IL
Executive Director	Don Duttlinger	PTTC	Houston, TX

#### Moved or changed companies? Let us know:

- Please change my address       Please add my name to the mailing list  
 Please delete me from the mailing list  
 Please change name of recipient from \_\_\_\_\_

Fax new information to 281-921-1723 or e-mail [hq@pttc.org](mailto:hq@pttc.org).

Name \_\_\_\_\_ Title \_\_\_\_\_

Company/Organization \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Country \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_ E-mail \_\_\_\_\_

#### ATTENTION SUBSCRIBERS

If you would like to receive this newsletter electronically, please notify PTTC via email at [hq@pttc.org](mailto:hq@pttc.org)

Petroleum Technology Transfer Council  
16010 Barkers Point Lane, Suite 220  
Houston, TX 77079

NON PROFIT  
US Postage  
**PAID**  
Houston, TX  
Permit No. 12494