



# News NETWORKS

Petroleum Technology Transfer Council WWW.PTTC.ORG

## R&D Impact in a High Price Environment

An investment in research and development can take many years before a broad impact on national production can be seen. Recent higher commodity prices on the world markets have provided unique opportunities for domestic producers to apply the findings of past R&D efforts. Who would believe that a few years ago we would be working at 450 °F static bottom hole temperatures or 30,000 psi bottom hole pressures today? Or reaching to test depths of over seven miles into the earth's subsurface or else drilling shallow gas wells in a day being possible feats? Projects that were studied and developed with funding from government and indus-

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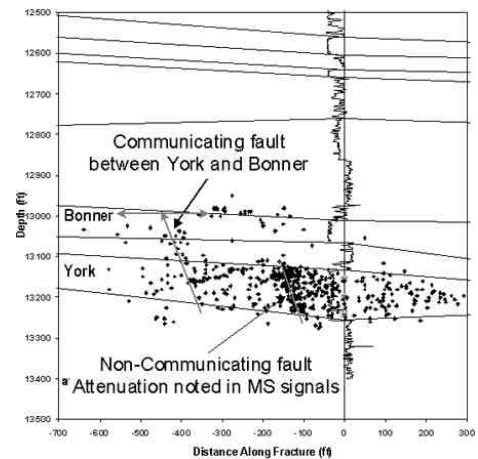
## Going Deep for Gas, Stimulation A Key Element

Deep gas represents a significant gas supply with U.S. resource estimates ranging from 87 to 133 Tcf. Recent activity projections are, for the next few years, that some 600 deep gas wells per year will be drilled in the U.S. Although representing only 1 to 2 percent of wells, their contribution to production will be much larger. Effective completion and stimulation practices are central to realizing this potential.

Pinnacle Technologies Inc. is finishing a DOE-supported project directed toward deep gas well stimulation technologies. In their work they soon discovered that much of the "deep" stimulation literature is 10 to 20 years old when deep was > 10,000 feet and hot was > 200 °F. To fill this public domain data gap for deep gas well stimulation, Pinnacle and operators worked together documenting case studies that integrated fracture modeling with production data analysis and well testing and/or fracture diagnostics. Case studies were developed for the Bossier sand in East Texas, Lobo sand in South Texas, and a Wyoming deep gas reservoir. Working through PTTC's Texas Region, Pinnacle recently presented insights from these case studies in a workshop in Houston. PTTC thanks Pinnacle, Anadarko Petroleum Corporation, BJ Services, Halliburton and Schlumberger (photo, page 2) for sharing their expertise.

*Just as a parent might be asked: Do you know where your teenager is?, a completion engineer might be asked: Do you know where your frac is going?*

*As this example from a Bossier Sand well in East Texas shows, its not as predictable as one thinks.*



Microseismic data reveal the fracture was fairly well contained near the wellbore. However a fault encountered not far from the wellbore dissipated much of the energy. As the job progressed and the frac moved further out, a communicating fault allowed the frac to move upwards into the Bonner zone and actually back toward the wellbore. (Reprinted with permission of Anadarko Petroleum Corp.)

Knowing where the frac goes is just one of the challenges. Getting proppant distributed where you need it is critical, then there's the matter of conductivity endurance—keeping that productivity up for the long term. More severe conditions require new generation frac fluids, which service providers are actively developing and there is more to learn about proppants too. Those attending the workshop noted that true real-time stimulation optimization (with real-time measured BHP and T) is a key enabling technology. With the more severe conditions there are greater requirements on surface iron, pumps and safety. Put simply, it's not going to be easy but technology is developing rapidly.

PTTC and Pinnacle will repeat the workshop on February 23 in Norman, Oklahoma, watch our calendar ([www.pttc.org/events.htm](http://www.pttc.org/events.htm)) for more information. ♦



Cont. from page 1, R&D Impact...

try can now be applied in the field on a broader basis due to the changing economic picture. It takes innovative technology applications to get to tougher reserves under challenging conditions. Whatever the application, obtaining timely field results is critical to increasing technology acceptance regardless of where the technology is developed.

It is important to realize the benefits of ongoing R&D efforts during high pricing periods. Seven years ago, complex reservoirs like the Barnett Shale unconventional gas play in Texas did not significantly register on the USGS radar screen, but today it's one of the ten largest gas plays in the United States. Technologies like horizontal drilling, 3-D seismic and aggressive reservoir fracturing have unlocked tight gas reservoirs that were uneconomical and thus overlooked in the past. Encouraging results have opened up new ways of thinking that allow industry to better understand complex geologic environments.

Much of that domestically-focused R&D will involve universities or geological surveys that provide key support for the professionals of tomorrow. In many DOE-supported projects, industry and academia work alongside each other leveraging their respective strengths to reach project goals. Beyond the research results themselves, the involved students will enter industry with greater knowledge of how to practically apply the concepts they learn. Those entering the workforce are now expected to contribute from day one, which requires both book learning and practical knowledge.

It is key to note that, although high energy prices are quoted in the NYMEX, domestic producers are not guaranteed to share in this run up. A quoted price in New York does not reflect what regional price pictures dictate. Rather, a spread discount difference increases with an increase in quoted NYMEX prices. For example, producers in the northwest have experienced over a \$22 per barrel differential before a further discounted adjustment for crude gravity and transportation. In the Appalachian region, \$6 quoted gas can net some producers in the range of \$3 per mcf delivered.

On the other side of the equation, direct costs have risen. Many operations are energy intensive so producers who must use electricity, natural gas or diesel for their enhanced production have seen expenditures double, triple and even quadruple. The price of tubular services including iron to drill, case and provide production tubing for well completions has risen to historical heights. The charge for other services is also rising with demand for production.

As the economics change, so do the targets for reserve replacement. While the higher prices do not drop directly to the bottom line, regional price pictures vary widely when considering purchaser's midstream, transportation issues and even international alternatives.

The U.S. has been a key beneficiary of past R&D investment. Clearly, an investment in technology by domestic industry in cooperation with state and national governments will play a crucial role in the ability to harvest these more difficult reserves in the future. ♦

## Deep Gas Well Stimulation Speakers



Program presented insights and field case study information from three basins. Work was performed as part of a Pinnacle-led, DOE-supported R&D effort. From Left to Right: Richard Sullivan, Anadarko Petroleum Corp.; Ron Matson, BJ Services; David Adams, Halliburton; Ernie Brown, Schlumberger; Mike Mayerhofer, Pinnacle Technologies Inc.

## Meeting Alerts

<p><b>NAPE Expo 2005</b> (see ad on page 14)</p> <p>January 26-27, 2005 Houston, TX.</p>
<p><b>GTI/DOE Natural Gas Technologies 2005 Conference</b></p> <p>January 30 - February 2, 2005 Orlando, FL.</p> <p><a href="http://www.gastechology.org">www.gastechology.org</a></p>
<p><b>SPE International Symposium on Oilfield Chemistry</b></p> <p>February 2-4, 2005 Woodlands, TX.</p> <p><a href="http://www.spe.org/spe/jsp/meeting/0,2460,1104_1535_2485693,00.html">www.spe.org/spe/jsp/meeting/0,2460,1104_1535_2485693,00.html</a></p>
<p><b>Offshore Engineer: Technology Uptake Critical to E&amp;P Success</b></p> <p>February 15-17, 2005 Galveston, TX</p> <p><a href="http://www.oilonline.com/oece/uptake/">www.oilonline.com/oece/uptake/</a></p>
<p><b>SWPSC 2005 Gas Well Deliquification</b></p> <p>February 28 - March 2, 2005 Denver, CO.</p> <p><a href="http://www.alrdc.com/workshops/index.htm">www.alrdc.com/workshops/index.htm</a></p>
<p><b>Stripper Well Consortium Spring 2005 Proposal Meeting</b></p> <p>March 8-9, 2005 San Antonio, TX.</p> <p><a href="http://www.energy.psu.edu/swc/meetings.shtml">www.energy.psu.edu/swc/meetings.shtml</a></p>
<p><b>SPE ATW: Accelerating Technology Acceptance</b></p> <p>March 15-16, 2005 Montgomery, TX.</p> <p><a href="http://www.spe.org/spe/jsp/meeting/0,2460,1104_1535_3069184,00.html">www.spe.org/spe/jsp/meeting/0,2460,1104_1535_3069184,00.html</a></p>
<p><b>World Oil Casing While Drilling Conference</b></p> <p>March 29-30, 2005 Houston, TX.</p> <p><a href="http://www.worldoil.com">www.worldoil.com</a></p>
<p><b>SPE/ICOTA Coiled Tubing Conference</b></p> <p>April 12-13, 2005 Woodlands, TX.</p> <p><a href="http://www.spe.org/spe/jsp/meeting/0,2460,1104_1535_2540652,00.html">www.spe.org/spe/jsp/meeting/0,2460,1104_1535_2540652,00.html</a></p>
<p><b>SPE Production Operations Symposium</b></p> <p>April 17-19, 2005 Oklahoma City, OK.</p> <p><a href="http://www.spe.org/spe/jsp/meeting/0,2460,1104_1535_2739324,00.html">www.spe.org/spe/jsp/meeting/0,2460,1104_1535_2739324,00.html</a></p>



## Phased-In Year-Round Drilling by Questar Approved at Pinedale

Questar Exploration and Production (Questar) has received Bureau of Land Management (BLM) approval to phase in over the next year their proposed year-round drilling program on their Pinedale Anticline leasehold. BLM gave Questar permission to operate two drilling rigs on one pad during the winter of 2004/2005. After completing a proposed water- and condensate-gathering system during summer 2005, Questar will be allowed to operate six rigs from three active pads beginning the winter of 2005/2006 through the winter of 2013/2014. Prior to the BLM decision, Questar's Pinedale drilling operations were restricted to May through November due to concerns over potential impacts on wildlife.

With directional drilling and other mitigation, Questar will reduce initial habitat disturbance by about two-thirds. With post-drilling reclamation the disturbance will be cut in half again. The gathering systems will eliminate up to 25,000 truckloads per year of produced condensate and water. Development time will be cut by a decade with year-round drilling, which will accelerate both Questar and Wyoming revenues. And year-round drilling will promote stable full-time jobs, versus prior partial-year jobs.

Ron Hogan's presentation about the Pinedale project at IPAA's Emerging Technologies conference in San Antonio (late October, just weeks before the favorable BLM decision) can be viewed online ([www.ipaa.org/press/Presentations.asp?G=12](http://www.ipaa.org/press/Presentations.asp?G=12))

For further information regarding BLM's approval see Questar's press release [www.questar.com/news/2004\\_news/11-10-04.pdf](http://www.questar.com/news/2004_news/11-10-04.pdf).

## National Safety Council Recognizes Noble Corporation

The Robert W Campbell award, a new international award co-sponsored by the National Safety Council and ExxonMobil Corporation, was recently awarded to Noble Corporation. The award recognizes companies that demonstrate leadership and excellence in business performance by integrating safety, health and the environment (HSE) within their operations systems.

Nineteen companies applied for the award and underwent an extensive application process. Assessments recognized three categories: management, technical and behavioral. Factors influencing Noble's selection include clearly communicating HSE policies and procedures, a workforce truly involved and committed to HSE, clear performance measurement, and selection/training/certification programs.

Building on success, the Campbell Award program has expanded to two categories: more than 1,000 employees and 1,000 or less employees. Applications for the 2005 award competition are due April 30, 2005.

Visit [www.campbellaward.org](http://www.campbellaward.org) for more information. ♦

## Downhole Separation Technology Performance: Relationship to Geologic Conditions

Argonne National Laboratory's (ANL) recent final report looked at publicly available data on downhole oil/water separators (DOWS) and downhole gas/water separators (DGWS) with a focus on relating performance of downhole separation to geologic conditions. Their report provides data on 59 DOWS trials and 62 DGWS trials, plus qualitative discussion of at least 35 other installations.

Regarding their focus, is there a relationship between DOWS and DGWS success and geologic conditions? Their conclusion, recognizing the limitations of their data, is no. An earlier study, which is summarized in ANL's report, reached a different conclusion. This earlier work concluded that installations having carbonate in both production and injection formations had the lowest risk. Medium risk was assigned to carbonate/consolidated sandstone, consolidated sandstone/carbonate, and consolidated sandstone/consolidated sandstone combinations. Any installation with unconsolidated sandstone in the producing zone was considered high risk.

There are other factors that play a role in the success of DOWS systems, the most important probably being ensuring that the injection formation has good injectivity and the injection process does not introduce materials that could cause plugging and reduce injectivity. Another important parameter is good vertical and mechanical separation between the pro-

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[www.netl.doe.gov](http://www.netl.doe.gov) for more info

duction and injection formations. Obviously, well candidates must contain sufficient reserves to payback investments.

DOWS and DGWS technologies have been around for more than a decade, but they are not widely applied due to risk and cost considerations. It must be recognized though that many of the early trials were in poorly chosen candidate wells. Data were not always accurate and systems failed because they were designed for conditions other than those present. Many early installation failures were due to other components not unique to the DOWS process. Despite the qualifiers, the reality is that producer interest has dwindled. ANL's summary of current technology activity illustrates the chilling effect that dwindling interest has had in technology development.

Even with all the uncertainty, there is still high economic potential in downhole separation. Those pursuing that objective owe it to themselves to peruse ANL's latest analysis. Contact Argonne National Lab's John Veil ([email jveil@anl.gov](mailto:jveil@anl.gov)) for a copy of this recent final report. ♦

### IADC Health, Safety, Environment & Training

February 8-9, 2005 — Houston, TX

[www.iadc.org/conferences/HS5-Program.htm](http://www.iadc.org/conferences/HS5-Program.htm)

### SPE/EPA/DOE Exploration & Production Environmental Conference

March 7-9, 2005 — Galveston, TX.

[www.spe.org/spe/jsp/meeting/0,2460,1104\\_1535\\_2557993,00.html](http://www.spe.org/spe/jsp/meeting/0,2460,1104_1535_2557993,00.html)



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).

### Baker Oil Tools' Coiled Tubing Solutions Handbook

Baker Oil Tools (Baker) recently released a Coiled Tubing Solutions Handbook, which can be downloaded at no charge in pdf format ([www.bakerhughes.com/bot/coiled\\_tubing/pdfs/coiled\\_tubing\\_handbook.pdf](http://www.bakerhughes.com/bot/coiled_tubing/pdfs/coiled_tubing_handbook.pdf)). Baker designed the handbook to highlight system capabilities within eight distinct intervention areas where coiled tubing can offer a highly effective and cost-efficient alternative. The eight categories in the CT Solutions Handbook are: Well Cleaning, Fishing and Milling, Zone Isolation, Stimulation and Fracturing, Sand Control Completions, Flow Management, Plug and Abandonment, and Sidetracking and Re-entry. ♦

### AAPG's Winter Education Conference, February 14-18 in Houston

AAPG's second annual winter education conference in Houston offers 11 different courses. There will be four concurrent sessions going each day, and course timing is staggered throughout the week so attendees can attend from two to four courses. Courses range from one to three days in length.

New topics this year include, among others:

- Assessment, Classification and Reporting of Reserves
- Characterization of Tight Gas Reservoirs
- Geochemical Exploration for Oil and Gas, Strategies for Success

The full-week registration fee for AAPG members is \$1,095, or courses are priced individually. For full course listing and more information visit AAPG's website ([www.aapg.org/education/wec/index.cfm](http://www.aapg.org/education/wec/index.cfm)). ♦

### Stimulating Bakken Horizontal Wells, A Montana Case Study

In this SPE paper Wiley et al describe the evolution of completion/stimulation practices of horizontal wells in the Bakken formation in a project in Richland County, Montana. Here horizontals are oriented in the direction

of maximum principal stress (340°) to foster longitudinal fracture growth.

Early on, to control fracture initiation at specific points, cemented liners and limited-entry perforating were used to control fracture initiation and distribution of the stimulation along the lateral. To reduce the probability of vertical growth with little stress contrast between the Bakken and overlying Lodgepole, wells were produced to create some drawdown (increasing stress contrast) before hydraulic fracturing. Although wells exhibited good productivity, analysis of radioactive tracers showed the toe would preferentially treat. Since cemented liners with limited-entry perforating was not ensuring the entire lateral was being treated, the completion/stimulation practice was switched, evolving to current practice of non-cemented, pre-perforated liners with a modified fracture treatment with diverter stages.

Four main changes (non-cemented liners and longer laterals, staged treatment and diversion, cleaner fracturing fluid with a more aggressive breaker, more proppant per foot of lateral), which were made simultaneously, resulted in a 30% production improvement and reduced well costs.

*Summarized from SPE 90697(Improved Horizontal-Well Stimulations in the Bakken Formation, Williston Basin, Montana; 2004 Annual Technical Conference) available from [www.spe.org](http://www.spe.org). ♦*

### Completion Engineering Association

The Completion Engineering Association (CEA), which has been active for almost 18 years, is an industry group created to facilitate problem solving Joint Industry Projects (JIPs) in the completions part of well construction. It provides a forum for:

- Presentation of proposals for completion-related projects sponsored by members for participation by members and non-members alike
- Exploring member interest levels in potential completion-related problems to aid in developing future industry-sponsored projects

- Advising academic organizations and other industry groups of the needs and interests of members

Initial fee for full-voting members and associate non-voting members is \$500 and \$250, respectively. The CEA awards a \$1000 scholarship each year to a junior or senior with a petroleum related major and an interest in completions.

For more information visit [www.completionengineeringassociation.org](http://www.completionengineeringassociation.org). ♦

### Frac Packing Near Water Contacts

Frac-packing has become the preferred completion for Gulf of Mexico (GOM) wells, but there are challenges for wells that have water contacts within the production zones. However industry is addressing the challenge. This article reports field experience in 12 frac-packed GOM completions (five gas, seven oil) in intervals having water contacts. Three of the 12 wells had less than 10 ft of separation between the perforated intervals and the water contacts, with separation in one well being only four feet.

Gas wells responded more favorably with four of five being successful. With one exception, all the oil wells reported low initial water production—but in a couple wells with the water contacts only four to six ft away, water production increased within three months. The authors (Bruce Comeaux, Tim Landry and Marty Usie of BJ Services and Guy Navaira of ChevronTexaco) ultimately advised caution in gas wells with less than 10 ft of separation, and in oil wells with less than 20 ft of separation.

Candidate selection starts with evaluating zonal isolation during primary cementing. Fracture modeling using well information is done. If cross-linked fluid causes excessive growth towards the water contact, linear gel fluid can be used. In the field work most wells were frac-packed using cross-linked gels. Treating volumes were reduced to restrict growth into the water zone. Cross-linked fluid treatments were ramped quickly to achieve maximum proppant concentrations of 10 to 12 ppg (pounds proppant per gallon of fluid). Linear gel fluid treatments were



limited to 4 to 8 ppg. Future treatment fluids may include relative permeability modifiers.

*Excerpted from "Experience Ensures Sand Control Success," Hart's E&P, October 2004, pp. 77-78. ♦*

## Spoolable Mechanical Connector for Larger Diameter Coiled Tubing

For offshore applications using larger diameter coiled tubing (CT) it is often necessary to splice together coils. In offshore environments welding with associated delays can be costly. BJ Services' recently developed Duralink Spoolable Connector (commercial since early 2004) is an alternative. Typical welded connections in CT might be 40% the life of the regular coil. The connector installed in field conditions has exhibited 50% on the 2 3/8-in and 2 7/8-in connections developed so far.

Mechanical splicing is faster than welding and the connector can go in and out of the hole multiple times. Fatigue of the connector (actually, the CT adjacent to the connector since the connector itself doesn't change) can be measured with a caliper, providing a reassuring check on the life software predicts. The connector does slightly reduce the inside diameter, but that has not been a problem in the larger CT sizes where the connector has been used so far. A 1 3/4-in version is under development.

*Excerpted from "The Reel Deal," Rick Von Flatern in Offshore Engineer, October 2004 viewable online at [www.oilonline.com/news/features/oe/20041001.The\\_reel.16032.asp](http://www.oilonline.com/news/features/oe/20041001.The_reel.16032.asp). Contact for John Misselbrook (referenced in the article) is [jmisselbrook@bjsservices.com](mailto:jmisselbrook@bjsservices.com). ♦*

## 2004 Oilfield Market Report

Spears and Associates, Inc. (Spears) annual Oilfield Market Report for 2004 is now available. It details the equipment and service markets associated with the exploration, drilling, and production segments of the worldwide petroleum industry. It contains a briefing on 33 distinct market segments, supplying concise, commercially-oriented independent and often exclusive information on each market: size, share, drivers, purchasing process, new technology, and recent transactions.

Spears & Associates develops the Oilfield Market Report based on thousands of interviews and hundreds of independent data sources. Spears reports that clients use the Oilfield Market Report to benchmark current business and to identify growth opportunities in new regions or in new product lines. For companies considering an acquisition, each segment in the Oilfield Market Report is a short course on the market, the players, the customers and what drives the business.

Licenses for a single user are \$4,150 or \$7,500 for a corporation/organization. For more information visit Spears and Associates website ([www.spearsresearch.com/OMR/OMRMain.htm](http://www.spearsresearch.com/OMR/OMRMain.htm)). ♦

## Rig and Rig Floor Technology

World Oil's December supplement, Rig and Rig Floor Technology, described newer rig floor and drilling rig technologies using information provided by the service/supply providers. Numerous options are described at length in the article, several of which are summarized below.

### Rig Floor Technology (selected items)

- *Continuous circulation system*—Varco's Continuous Circulation System allows drilling fluid circulation to be maintained while making connections with conventional pipe during the drilling process. Continuous fluid circulation creates conditions needed to eliminate downhole pressure fluctuations, instead establishing and maintaining a constant pressure regime. Since prototype testing in western Oklahoma in 2003 proved the concept worked, Varco has been preparing for commercial implementation. The first production unit was scheduled to begin operations in December 2004.
- *Dual-motion shale shaker*—M-I Swaco's Mongoose PT shaker provides both linear (heavy, high volume solids) and balanced-elliptical motion (later on, longer screen residence time and drier solids)
- *Unconventional casing running system*—Varco's Casing Running Tool eliminates the need for a separate casing crew, plus the casing can be rotated into the hole at any time needed. Rotating and circulating the casing in the hole greatly increases the likelihood of getting to bottom.

### New rig designs (selected items)

- *Scaled-down new rig type for shallow gas drilling*—Precision Drilling's Super Single Light, the advantages of jointed-pipe operations with the high penetration rates and mobility of a coiled-tubing unit. Depth capacity just under 4,000 ft; static load capacity of 100,000 lb. Canadian experience indicates rates of penetration rivaling coiled-tubing rates.
- *Automated casing-while-drilling rig*—Tesco updated the rig floor of its automated Genesis series Casing Drilling rigs to reduce drilling-crew time in the most hazardous work area on a rig and increase efficiency by centralizing all controls to the driller, who is likely the most experienced person on the rig floor.

Progress within DOE's microhole (very small diameter coiled tubing) drilling program ([www.netl.doe.gov/publications/press/2004/tl\\_microhole\\_tech\\_selections.html](http://www.netl.doe.gov/publications/press/2004/tl_microhole_tech_selections.html)) is also described. Schlumberger is working on a "built for purpose" coiled tubing rig designed for shallow and rapidly drilled wells. Expect DOE's Phase II award announcements soon on the microhole solicitation that closed Oct. 6, 2004.

*Excerpted from a special supplement in December 2004 World Oil, viewable online at [www.worldoil.com/Magazine/MAGAZINE\\_DETAIL.asp?ART\\_ID=2458&MONTH\\_YEAR=Dec-2004](http://www.worldoil.com/Magazine/MAGAZINE_DETAIL.asp?ART_ID=2458&MONTH_YEAR=Dec-2004). ♦*

## Concentrated Emulsifier Reduces Emulsifier/ Additive Usage in Invert Emulsion Mud

Halliburton's FACTANT™ concentrated emulsifier provides both stable emulsification and filtration control for invert emulsion fluids. A recent article in *Drilling Contractor* cited results from drilling 30 wells in the Williston Basin. A typical well there using invert mud requires some 50 drums of conventional emulsifier and 100 sacks of filtration control additive. Solvent concentration in the concentrated emulsifier is less than 5%, versus a third or more in typical emulsifiers. One operator switched to the concentrated blend and reduced the needed emulsifier to just over 11 drums, plus they eliminated over two tons per well of sacked filtration control additives. Beyond performance itself, the operational aspects of not having to stock,



handle and dispose of so many drums or handle near as much additive are attractive for producers.

*Excerpted from "Concentrated Emulsifier Can Provide Better Stability," Drilling Contractor, November/December 2004 viewable online at [www.iadc.org/dcp/dc-novdec04/Nov4-Halliburton.pdf](http://www.iadc.org/dcp/dc-novdec04/Nov4-Halliburton.pdf). For product information see Halliburton's website ([www.halliburton.com/esg/sd1352.jsp](http://www.halliburton.com/esg/sd1352.jsp)).*

### ScalePROP, An Alternative to Scale-Inhibitor Squeezes

Scale-inhibitor squeezing is a common technique for preventing scale deposition. These can be expensive to perform, there's the initial shut-in period to consider, and time before re-squeezing is needed can be short. For hydraulic fracturing and packing treatments, Schlumberger's ScalePROP is an alternative offering longer-term protection. The key behind ScalePROP is a porous ceramic proppant that can be impregnated with the optimum amount of scale inhibitor (estimated considering the anticipated volume of water and scaling tendencies).

The impregnated proppant is deployed as a fraction (typically 5 to 25 percent) of the total proppant. The impregnated proppant can be preblended with conventional proppant before the job, or mixed on the fly during the job. When produced water begins flowing through the pack, scale inhibitor is slowly released. Unlike squeeze treatments, there is no significant loss of chemical in the early treatment stage. Scale inhibitor continues to be released at low (yet sufficient) dosage to control deposition.

*For further information visit Schlumberger's website ([www.oilfield.slb.com/content/services/stimulation/scale/scaleprop.asp](http://www.oilfield.slb.com/content/services/stimulation/scale/scaleprop.asp)) where some North Sea case studies are presented.*

### Texas A&M Begins Hands-On Learning Program

In a new initiative to strengthen hands-on instruction in drilling, completions, and production, Texas A&M University is implementing a Technology Partners Program. Initial sponsors are Cameron, Baker Hughes, Halliburton, Lufkin Industries and Weatherford. The Program will link students with technology and service providers, giving the students opportunities to visit professional

laboratories and well sites, visit with working professionals on and off campus, etc. Students will develop a "working" knowledge of the industry, increasing the value of the technical knowledge they later come to industry with.

*See the Program website (<http://pumpjack.tamu.edu/Faculty&Staff/faculty/scott/technologypartners/body.htm>) for more information. Additional sponsors (\$7,500) are welcome. Contact Dr. Stuart Scott ([SLScott@tamu.edu](mailto:SLScott@tamu.edu)) for more information.*

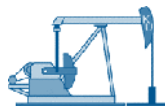
### Weatherford's TorkWrench™, Bigger Muscle in Smaller Size

Weatherford's new TorkWrench™ tong system is designed to fill a niche for equipment that can handle 80,000 to 120,000 ft-lb of torque yet be small enough to fit on the rig floor of small- to medium-size jackups and larger land rigs. There are four positioning options: (1) handling frame with a portable track setup, (2) a rotational column mounted

on the rig floor and an extension mechanism that moves the system to and from the well center, (3) a PowerScope® option that puts the system on an extension arm that can be as far as 23 ft from the well center, and (4) a MiniScope option that provides only in-and-out operation but requires only minor rig modifications.

Smaller size and ability to do the job are important, but for operations requiring multiple wrenching cycles the system can reduce time up to 50% due to 50° of rotation versus the 28° of rotation with typical equipment complemented by a high-torque spinning wrench.

*Excerpted from "TorkWrench™ Tong System from Weatherford Has Niche Market," AESC's Well Servicing magazine, November/December 2004, p. 24. Further information from Weatherford's W Magazine (see page 5-ff, [www.weatherford.com/weatherford/groups/public/documents/general/wft016133.pdf](http://www.weatherford.com/weatherford/groups/public/documents/general/wft016133.pdf)).*



#### Tertiary Oil Recovery Project

### TORP

University of Kansas



Serving the State of Kansas Through Education, Research and Technology Transfer

## Sixteenth Oil Recovery Conference

April 6-7, 2005  
Wichita, Kansas

Co-sponsored by PTTC's North Midcontinent Region

The kickoff session on Wednesday eve, April 6 (5:30 to 6:30 pm) will allow attendees to personally experience 3-D visualization of petroleum attributes. Wrap up the evening with a social hour and get prepared for the varied technical program on Thursday, April 7.

#### CO<sub>2</sub>-Related Presentations

- Update on CO<sub>2</sub> Pilot Project in central Kansas
- Monitoring the CO<sub>2</sub> Pilot Project using 4-D Seismic
- An Improved Method for Acidizing Oil Wells Using CO<sub>2</sub>

#### Polymer-Related Presentations

- Interactive Gel Polymer Treatment Website
- Selecting Polymer Treatment Candidates Using Transient Testing

#### Other Improved Recovery Technologies

- Producing Shallow Heavy Oil using MEOR and Horizontal Fracturing
- Using Biosurfactants for IOR
- Coalbed Operations in Eastern Kansas

The DOE-supported Stripper Well Consortium is featured during Thursday's luncheon session. Wrapping up the conference, three of the top independent producers in Kansas will participate in a panel session about "The Current and Future Role of Technology in the Exploitation of Kansas Oil Reserves."

Visit [www.torp.ku.edu](http://www.torp.ku.edu) or call 785-864-7398 for more information



## 2004 in Review, A Focus on Technology

PTTC has summarized regional results in the technology transfer realm during 2004. The following article highlights focused areas that are of broad interest and value to industry. Nationally, PTTC strives to support and share these initiatives inter-regionally to speed technology uptake across the country. To accomplish this PTTC continues to provide case studies in *World Oil*, writes a monthly Tech Connections column in *American Oil and Gas Reporter* and assembles frequent E-mail Tech Alerts, for which the audience continues to grow. PTTC encourages readers to view individual regional websites periodically to access the expanding technology information and data from over a decade of contributions.

### Appalachian

A feature of continued interest to Appalachian producers is the online GIS maps of Trenton-Black River, horizontal wells and coalbed methane activity. These interactive GIS maps along with the extended online newsletter that captures technical insights keep producers current. Industry response to a coalbed methane road mapping exercise held late in 2003 has led to formation of a Northern Appalachian Basin Coalbed Methane Research Consortium. Among their core activities, the Consortium will develop a coalbed methane database and evaluate research proposals submitted by Consortium members.

### Central Gulf

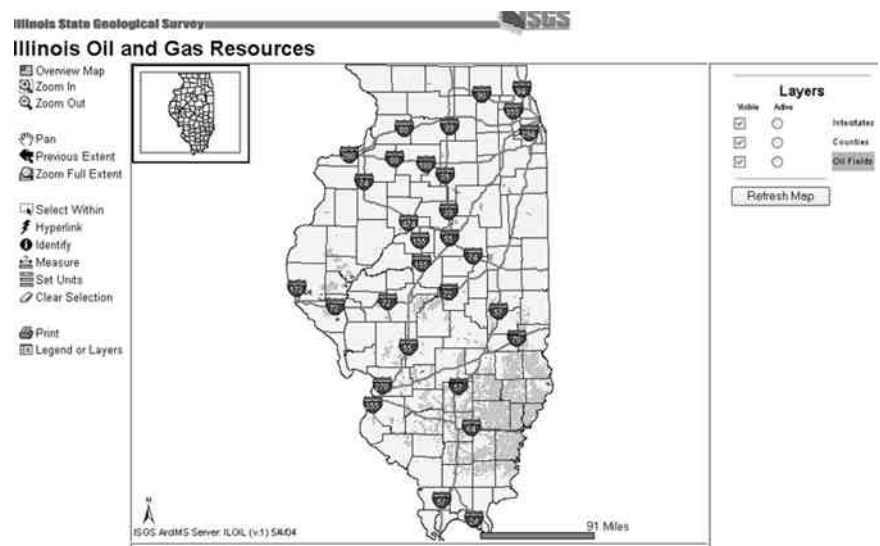
The region responded to strong producer interest in coalbed methane, co-sponsoring a workshop on "Coalbed Methane Resources in the Southeast" with the University of Louisiana Lafayette's Energy Institute. A follow-on workshop and field trip focused solely on Louisiana's fledgling CBM industry is planned in spring 2005. Early on, the region developed the Louisiana Desktop Well Reference CD, which spurred development of the state's SONRIS online information system. Now the region is supporting a pilot project called the Louisiana Parish Well Reference that has more detailed information, but only at the parish level. Hopes are that this pilot project will demonstrate sufficient value to attract the major state funding required should it be implemented statewide. A late 2004 workshop focused on finding the potential in inactive/marginal wells. Don Goddard's study of "Shallow Miocene Gas Potential" provides another resource for stimulating activity in Louisiana.

### Eastern Gulf

Consistent with a historical emphasis on exploration, key workshops focused on "AVO Technology" and "Seismic Attributes for Reservoir Characterization." A fall workshop presented three field case studies (North Blowhorn Creek, Vocation Field, and Womack Hill Field) that are a product of DOE-supported research projects at the University of Alabama. Beyond identifying potential in the individual fields, these case studies demonstrated concepts useful for exploitation in other fields. Alabama's Black Warrior Basin CBM play is the most mature in the U.S. Regional support for the "International CBM Symposium" in Tuscaloosa helps capture operational insights of value to other CBM basins across the country as they mature. Staff has been working with the Mississippi State Board of Registered Professional Geologists to provide events that will help individuals meet their professional development requirements.

### Midwest

The ILOIL interactive mapping service developed by the Illinois State Geological Survey (ISGS) in a DOE-supported PUMP project is serving Illinois Basin producers well. Several regional events focused on acquainting producers with ILOIL's features and capabilities and there are already good reports about how producers are using the online information. ISGS and PTTC are helping maintain and even expand ILOIL now that the PUMP contract has been completed. Importing a concept from the Appalachian region, staff worked with the Illinois O&G Association to tailor pumper operations and safety training for the Illinois Basin. Michigan producers continued their strong support for exploration- and case study-oriented workshops, creating full houses for "Niagaran" and "Michigan Basin Undiscovered O&G Resources."



### North Midcontinent

Working alongside KU's Tertiary Oil Recovery Project group, case study information has been placed online for three technologies of regional interest: (1) polymer-gel water-shutoff (WSO) treatments, (2) GasGun™ solid propellant stimulation treatments and (3) small scale 3-D seismic surveys. Polymer-gel WSO treatments are of such interest that a separate website was developed. Case study examples from the above effort were featured in workshops in Wichita and Hays that focused on exploitation of mature reservoirs through technology. The Technology Fair provided an opportunity to highlight other technologies applicable to Kansas' reservoirs. Kansas oil production has actually increased ([www.nmcpttc.org/News/2004/oilprod.html](http://www.nmcpttc.org/News/2004/oilprod.html)) in response to aggressive technology applications and cooperation between producers, consultants and service providers in the area. There's also a rapidly growing CBM industry in southeast Kansas that regional activities support.

## Rocky Mountain

Always looking for new ways to serve producers, 2004 began with an "Online Software Fair." This organized listing of information about free and low cost (generally under \$1000) software packages presents information in 12 different categories. Staff continued to emphasize hands-on training for popular industry packages, including those from Seismic Micro Technology, GeoPlus and GeoGraphix. The region debuted the Core Locator, an interactive map-based search engine that will allow a user to find (for a selected map area) what cores are available and where they are. Beginning with Colorado and portions of Texas BEG's core holdings, the Locator will ultimately be national in scope.

Thanks to 28 sponsors, the "Futures in Energy" outreach program provided O&G training, drawing 20 high school teachers and 13 high school students. Eight students received four-week paid internships. Effort was so successful that it looks like it will be held in both Denver and southwest Wyoming in 2005.

## South Midcontinent

The home run for the year has to be the 2-day "Unconventional Gas Symposium" that Brian Cardott with the Oklahoma Geological Survey developed. More than 300 individuals learned insights about CBM and potential shale development. Insights were captured in PTTC Network News ([www.pttc.org/news/1qtr2004/v10n1p7.htm](http://www.pttc.org/news/1qtr2004/v10n1p7.htm)). Play-based studies performed by the Oklahoma Geological Survey, with tech transfer support from PTTC, continue to be of strong interest—the most recent focusing on the Cromwell formation. Field- and operations-oriented workshops delivered by Oklahoma's Marginal Well Commission support yet another industry niche. Personal connections developed during the region's DOE-supported PUMP project effort have borne fruit in Arkansas—there's now a solid workshop program in place. Looking forward to the future, the region also supports the AAPG Student Expo at the University of Oklahoma.

## Southwest

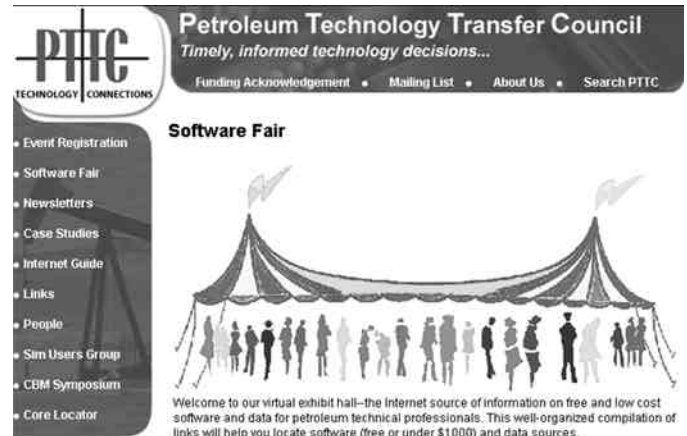
Environmental and data issues remain a strong focus in New Mexico. Staff developed workshops on produced water management and soil remediation and supported a series of workshops by New Mexico's Oil Conservation Division on pit rules. Usage of the New Mexico State Lands database continues to grow, plus staff continually works to expand and refine online access to conventional O&G data. Where relevant, insights from other research work within New Mexico Tech's Petroleum Recovery Research Center are incorporated into workshops. The region leverages efforts through open cooperation with the Texas Region, a prime example being joint support for the CO<sub>2</sub> Conference in Midland. In some instances the region works with the Rocky Mountain Region to develop and deliver events to producers in northwestern New Mexico.

## Texas

Mention Texas and one thinks of the Barnett Shale, one of the hottest plays in the domestic U.S. Supporting industry the region worked with the Ellison Miles Geotechnology Institute at Brookhaven College on a major Barnett Shale Symposium (more than 200 attendees) and developed a web section devoted specifically to the Barnett Shale. In the cooperative effort vein, one would be remiss not to mention the "Annual CO<sub>2</sub> Conference" in Midland that is supported by PTTC's Texas and Southwest regions, plus several other groups. This has become the preeminent CO<sub>2</sub> flooding conference in the world, and recent additions of a Carbon Management workshop make a natural tie. In an effort that will bear future fruit for Texas producers, the region is supporting the Texas Bureau of Economic Geology's Permian Basin Initiative as it works toward developing an integrated database of geological, geophysical and petrophysical information for Permian Basin reservoirs. Bob Kiker's operations experience extends throughout Texas and into other regions through his involvement in PTTC's series of workshops on "Produced Water Management."

## West Coast

There was a consistent focus on case studies during 2004, ranging from "Power Consumption Reduction in California Oilfields" to "Water Control." Global Energy Partners developed and administered an energy efficiency audit/rebate program for the California oilpatch. The consumption reduction workshop summarized their results and presented individual case studies documenting power savings realized from different producer actions. The "Water Control" workshop summarized insights from the region's DOE-supported PUMP effort. Focus there is on learning to identify causes for excessive water production and demonstrating affordable solutions. Small-scale field demos of water control technologies are being implemented. Beyond these practical operations issues, geological workshops focused on diatomites and faults, of which there are plenty in California. Continuing the region's pioneering effort, the COMET 2004 student training and internship program drew 15 students this year. ♦



**PTTC**  
TECHNOLOGY CONNECTIONS

**Petroleum Technology Transfer Council**  
Timely, informed technology decisions...

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**Software Fair**

- Event Registration
- Software Fair
- Newsletters
- Case Studies
- Internet Guide
- Links
- People
- Sim Users Group
- CBM Symposium
- Core Locator

Welcome to our virtual exhibit hall—the Internet source of information on free and low cost software and data for petroleum technical professionals. This well-organized compilation of links will help you locate software (free or under \$1000) and data sources.

Data	GIS	Mapping	Cross Sections/Log Displays	Seismic	Petrophysics and Digitizing
Reservoir Analysis	Production Engineering	Drilling and Completion	Economics	Risk Analysis/Data Modeling	Office Apps/Graphics

PTTC is an industry-directed 501-C-3 organization created to transfer exploration and production technology to U.S. producers. By accelerating the application of profitable technologies, PTTC enhances domestic oil and natural gas production. 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, but individuals and institutions are solely responsible for the consequences of its use.

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(Intranet for Board & RLDs)



# Spring 2005 Gas Well Deliquification Workshop

Organizers:

Artificial Lift R&D Council, Southwestern Petroleum Short Course,  
Texas Tech University

## Monday, Tuesday, and Wednesday

Feb. 28, Mar. 1 and 2, 2005

Renaissance Denver Hotel

3801 Quebec St.

Denver, CO 80207

(303) 399-7500

Workshop cost: \$300, \$400 after Feb. 14, 2005

Course cost: \$150, \$200 " " " "

Cost for both: \$400, \$550 course + workshop

Everything you  
need to know  
about deliquifying  
gas wells!

## Continuing Education Courses

### 1 & 2 – Introduction to Deliquification

Two separate half-day sessions: Part I & Part II

Monday, Feb. 28 --- 8:00 am – 5:30 pm

Dr. Jim Lea, Texas Tech University

### 3 – Gas-Lift for Deliquification

Monday, Feb. 28 --- 8:00 am – 12:00 pm

Boots Rouen, Schlumberger

### 4 – Compression for Low Pressure Gas

Monday, Feb. 28 --- 8:00 am – 12:00 pm

Vincent A. Thomas, Tescorp

### 5 – Surfactants/Chemicals for Deliquification

Monday, Feb. 28 --- 1:30 pm – 5:30 pm

James Archer, Multi-Chem

David Smith, DynaCoil

### 6 – Plungers for Deliquification

Monday, Feb. 28 --- 1:30 pm – 5:30 pm

Dan Phillips, ConocoPhillips

Lynn Rowlan, Echometer

## Opening Reception & Keynote Address

- Meet gas well colleagues
- Challenge attendees to make step changes in gas well operations

Monday, Feb. 28, 5:30 – 7:00 pm

Keynote Speaker: Steve Holditch

## Panel Discussions

- In-depth discussion of each technical session topic

Tues. & Wed. after each session

## Break-Out Sessions

- Informally discuss topics of interest (choose one)  
Tues., March 1, 4:30 pm – 6:00 pm
- Artificial Lift Selection & Design Challenges
- Automation for Gas Well Deliquification
- Deliquification of Coal Bed Methane Wells

## Roundtable Discussion

- Discussion of future needs  
Wed., March 2 --- 4:30 pm – 5:30 pm

## Exhibits and Displays

- Transfer knowledge on new gas well production tools, techniques, and services  
Tues. & Wed. at breaks

## Workshop Reception

- Tuesday, Mar. 1  
Reception: 6:00 – 7:00 pm  
Door Prizes  
Finish in time to make separate dinner plans

## Technical Sessions

**Tuesday, March 1**      **Wednesday, March 2**

AM: New Technology      AM: Case Histories, Tubulars

PM: Chemicals              PM: Automation, Modeling

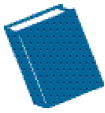
For more information or to nominate presentations, exhibits, etc., contact:

Dr. Jim Lea, Texas Tech University, [james.lea@coe.ttu.edu](mailto:james.lea@coe.ttu.edu)

Cleon Dunham, Oilfield Automation, [cleon@oilfieldautomation.com](mailto:cleon@oilfieldautomation.com)

Ronda Brewer, Registration, [ronda.brewer@coe.ttu.edu](mailto:ronda.brewer@coe.ttu.edu)

Or go to [www.alrdc.com](http://www.alrdc.com) and navigate to the Gas Well Workshop



## Cavity-Like Completion in GOM Weak Sands Field

In a DOE-supported effort the Global Petroleum Research Institute (GPRI) at Texas A&M University reports success in demonstrating a cavity-like completion in the Mustang Island Field. Mustang Island Block 787 was making 0.5 to 1 Mmcf per day before cavity completion. After cavity completion the Block made about 5 Mmcf/d with occasional trace sand that the platform could deal with. During the completion about 10 bbl of sand was produced before production stabilized. Incremental revenue was approximately \$12,800 per day at a cost of \$5,700 per day, or about \$7,000 per day profit during trial testing. The test well flowed at 4.5 Mmcf/d for nearly six months before watering out.

There are a number of factors that control cavitation. Natural conditions include: shear and tensile strengths, stress-strain characteristics, in particular, the degree of brittleness, energy dissipation after the peak stress, formation particle size, shape and distribution. The effective stress state, particularly elevated water cut (in water-wet reservoirs), absolute and relative permeability, stratigraphy of the pay zones and over-/under-burden and vertical and areal heterogeneity all must be understood. And the list goes on—although not easy to apply, the demonstration project indicates significant upside can exist in weak sands for cavity completion.

Contact DOE's Gary Walker ([Gary.Walker@netl.doe.gov](mailto:Gary.Walker@netl.doe.gov)) or GPRI's Dave Burnett ([burnett@spindletop.tamu.edu](mailto:burnett@spindletop.tamu.edu)) for further information about this test. ♦

## Three-Part Series on Unconventional Gas in Gas TIPS

Through the last year the Gas TIPS newsletter has published a three-part series discussing unconventional gas and the involved technologies. Now that the series has been completed, readers are encouraged to review the articles to solidify knowledge and insights from looking at individual articles.

*Tight Gas Sands Development, How to Dramatically Improve Recovery Efficiency (Part 1, Winter 2004).* Vello Kuuskraa with Advanced Resources International outlines a suite of technologies necessary for optimizing

production and recovery from tight sands. These include natural fracture identification, well logging, multi-zone completion and well testing and analysis. Increasing recovery through drilling on tighter spacing is also covered.

*Optimization of Infill Drilling in Naturally-Fractured Low-Permeability Gas Sandstone Reservoirs (Part 2, Spring 2004).* Lawrence Teufel with New Mexico Institute of Mining and Technology discusses the importance of natural fractures and their associated anisotropy to infill drilling optimization in the San Juan Basin.

*Unconventional Gas, Reserve Opportunities and Technology Needs (Part 3, Fall 2004).* This final series contains a good discussion of current and needed technology development in key areas—natural fracture identification, well logging, multi-zone completion, and well testing and analysis.

Gas TIPS magazine is available online through DOE National Energy Technology Laboratory ([www.netl.doe.gov/scngo/Reference%20Shelf/GasTIPS/GasTIPS.html](http://www.netl.doe.gov/scngo/Reference%20Shelf/GasTIPS/GasTIPS.html)). ♦

## DOE Project Winners Noted In Multiple Announcements

On **December 8** DOE announced 35 new cost-shared R&D projects with total award value of more than \$39 million. There is strong university support with nearly ¾ of the awards going to universities (includes geological surveys). Thirteen universities in eight states are represented. Note that both university and industry awards may involve additional partners from either academia or industry. The projects extend from two to five years, and will be managed by DOE's National Energy Technology Laboratory.

Awards covered by this announcement were made in four research areas, including:

- Drilling technology for high-speed downhole motors, two projects both with industry.
- Advanced diagnostics and imaging technology, 13 projects all but one with universities. Five projects will develop technologies to increase the accuracy and resolution of subsurface imaging. Three will conduct regional studies and basin analysis. The remaining five will develop methods to better characterize and manage oil reservoirs.

- Advanced reservoir efficiency processes, 14 projects with all but one with universities.
- Delivery reliability for natural gas, six projects with all but one with industry.

The following day, **December 9**, DOE announced six gas-related research awards. Winners include 3DGeo Development, Inc., Paulsson Geophysical Services, Inc., RDSP I, L.P., Technology International Inc., and the University of Texas at Austin.

**Earlier in October** DOE had announced research projects in Michigan and New Mexico with projects being awarded to Michigan Technological University, Western Michigan University, New Mexico Institute of Mining and Technology (3 awards) and Correlations Company.

Review DOE's Tech Lines ([www.netl.doe.gov/publications/press/press\\_toc.html](http://www.netl.doe.gov/publications/press/press_toc.html)) for more complete information on each project. ♦

## New O&G Fields Map of Utah

Through a DOE-supported project the Utah Geological Survey has developed a new O&G fields map of Utah. The map outlines key geologic/physiographic features. It shows much more than location, including geologic age, resource, reservoir and rock formations, major O&G pipelines and enhanced oil recovery projects (horizontal drilling, water-floods and gas injection). For pipelines it shows pipe diameter, direction of flow and current operators. Natural gas processing plants and oil refineries, daily capacities and operators are also shown.

An article in DOE's Class Act newsletter ([www.netl.doe.gov/scngo/Petroleum/publications/newsletters/ca/CAAUG2004.pdf](http://www.netl.doe.gov/scngo/Petroleum/publications/newsletters/ca/CAAUG2004.pdf)) provides more detail. *The map (M-203DM) is available from the Utah Geological Survey ([www.ugs.state.ut.us/bookstore/ugs/new-pubs/newmaps.htm](http://www.ugs.state.ut.us/bookstore/ugs/new-pubs/newmaps.htm)).* ♦

### Stripper Well Consortium

2005 Proposals Due Feb. 8

Proposal Review Meeting - March 8-9  
San Antonio, Texas

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



**Funding Opportunity  
Oil and Gas Program Solicitation 2005  
DE-PS26-05NT15600-00  
DUE DATE: March 1, 2005**



DOE has just released an Oil and Gas funding opportunity. It is divided into five areas of interest. Approximately \$11.3 million of DOE funds are ultimately expected to be available (\$6.3 million in FY05). DOE anticipates awarding between 11 and 17 projects by September 30, 2005.

For Areas of Interest 1 and 2, the **applicant shall include a university team member for the Phase 1 (research) effort, and an oil producer for the Phase II (demonstration) effort**. Universities and Producers interested in partnering can so indicate online ([www.netl.doe.gov/business/solicit/index.html](http://www.netl.doe.gov/business/solicit/index.html)).

**Area of Interest 1 - Advanced Diagnostics and Imaging Technology** - topics: (A) Subsurface Imaging Focusing on New Vertical Seismic Profiling (VSP) Methodology and Interpretation; (B) Reservoir Characterization and Management.

**Area of Interest 2 - Reservoir Efficiency Processes** - topics: (A) Heavy Oil Recovery and (B) Gas Flooding.

**Area of Interest 3 - Preferred Upstream Management Practices (PUMP)** - a field demonstration to increase current oil production from an oilfield that otherwise would not be produced. The focus is on new technologies or technologies that are not the current practice in the particular region of the country for which it is now being proposed.

**Area of Interest 4 - Delivery Reliability for Natural Gas** - topics: (A) Inspection Technologies; (B) Remote Sensing; (C) Operational Technologies; and (D) Materials Development.

**Area of Interest 5 - Alternative Storage Technologies** - topic: Alternative Natural Gas Storage Technologies.

	Area 1 (A, B) ADIS	Area 2 (A, B) Reservoir Efficiency Processes	Area 3 PUMP Field Demonstration	Area 4 (A, B, C, D) Delivery Reliability	Area 5 Alternative Gas Storage
Budget Periods	2 Budget Periods, 1 research, 1 demonstration	2 Budget Periods, 1 research, 1 demonstration	Up to 3 Budget Periods	Up to 3 Budget Periods	Up to 3 Budget Periods
Period of Performance	≤ 3 years	≤ 3 years	≤ 3 years	≤ 3 years	≤ 3 years
<b>Mandatory</b> Non-Federal Cost Share	Research ≥ 20%; Demonstration ≥ 50%	Research ≥ 20%; Demonstration ≥ 50%	Demonstration ≥ 50%	Research ≥ 20%;	Research ≥ 20%;
Est. No. of Awards	2	2	1	4 - 8	2 - 4
Anticipated Award Size - DOE Share*	\$1,500,000 per project/award; maximum of \$500,000/yr	\$1,500,000 per project/award; maximum of \$500,000/yr	\$1,500,000 per project/award; maximum of \$500,000/yr	\$800,000 per project/award	\$500,000 per project/award

[www.netl.doe.gov/business](http://www.netl.doe.gov/business)

[www.grants.gov](http://www.grants.gov) \*

[e-center.doe.gov/](http://e-center.doe.gov/)

\*Those submitting through [www.grants.gov](http://www.grants.gov) should recognize that registration may require 14 days.



## Interviews with Ken Oglesby, Oak Resources, Inc. and Bernie Miller, Miller Energy Technologies, LLC

Last issue's interview with Tom Williams, Maurer Technology (Noble) discussed technology development and commercialization from a broad, national, larger company perspective. PTTC is fortunate to have two individuals, Bernie Miller and Ken Oglesby, on the national Board who have, in recent years, been focusing their careers on taking ideas from "thought" through to "commerciality." PTTC thought other individuals contemplating "the big step" into competing in technology development in a rapidly changing, often high-dollar technology world would appreciate their perspectives, so we posed a couple of questions to them. A common thread in Bernie and Ken's bios is a strong commitment to volunteerism, in professional societies and other industry organizations. PTTC salutes that commitment.

*What has been the biggest "hurdle" you have encountered? In a related vein, although it may not have been the biggest hurdle, what has been the biggest "surprise?"*

**Oglesby:** Time, Sleep and Money. One has a 'day' job and your 'burning new idea' eats up your free time and sleep time - if you really believe in it! Money because it never works the first time, unless you are brilliant—so it takes a few times to make it work. The more technicaly advanced the idea, the more expensive each step. Also industry (service and operators) continues to be reluctant to try new things. It may take building a complete infrastructure around your idea just to prove it works, which again takes time and money. The patenting process

can take much time and money as well. At a personal level, once you have poured yourself into an idea or project for so long and success is there, it may be hard to give it up if that's where the opportunity leads.

**The Surprise** - I liked the creative effort and decided to follow that direction for other ideas.

*Editor's note - I found it significant that the 'surprise' in both cases was pleasant. Other innovators should take heart in that. The sacrifice will have its own reward.*

**Miller:** Getting acceptance of processes in different areas. Operators want processes proven in their back yard. Obviously there are differences in reservoirs and applications, but if a process is commercial in one basin, then the same process can be successful if properly applied in other basins.

**The Surprise** - when operators that it would seem wouldn't be interested in testing a new process suddenly step up to the plate and commit to a project.

*What is the single most important "advice" you would offer those contemplating what you have done?*

**Oglesby:** Make sure you are ready to be very committed to making it work. Think about the pros and cons about the new idea and satisfy your self that it will work before making

that commitment. Also find some deep pockets to get it to a marketing stage quicker. Industry has some built in inertia and resistance to change so make sure it will make a difference!

**Miller:** Do the research! Whether it is an enhanced oil recovery process or a mechanical application, do the market/data search. With the databases now online and available from the states, target marketing has been brought to a new level. This will help the technology provider as well as the operator.💧



**Ken Oglesby, PE**, is president and owner of Oak Resources, Inc. (Oak), an E&P company he established in 1987. Oak has drilling and production operations in Oklahoma and Texas. Oak has investigated and tested new technologies for the O&G industry, including horizontal wells using small drillpipe, underbalanced, air hammers and high pressure jetting. He recently formed IMPACT Technologies, LLC, to design, build and bring together the needed technologies to provide underbalanced, short radius, hydraulic and CO2 abrasive slurry jetting services. Like many in the industry today, Ken began his career with a major, working for Chevron in Louisiana and California. Ken holds a MS in Engineering and BS in Petroleum Engineering from the University of Tulsa.. He represents the Society of Petroleum Engineers on PTTC's National Board.

**Bernie Miller** is president of Miller Energy Technologies, LLC, an oil and gas production company with properties in the Appalachian and Illinois Basins. Miller is pursuing technology development in two areas—(1) EOR processes using nitrogen from onsite air separation membrane units and liquid CO2 from ethanol and other sources and (2) artificial lift systems for stripper wells that are capable of being deployed on coiled-reinforced poly. He has extensive experience in reservoir and field engineering, from majors to small independents and has a strong interest in improved oil recovery. Miller received a BS degree in Petroleum Engineering from West Virginia University and an MBA in Finance from Tulane University. He represents the Appalachian Region on PTTC's National Board.



**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). For some of the workshops the regions have posted speaker presentations online.

**Coalbed Methane Resources in the Southeast** — Based on a workshop sponsored by PTTC's Central Gulf Region, June 8, 2004 in Lafayette, LA.

**Petroleum Systems of the Michigan Basin—A Look at Remaining and Undiscovered Oil and Gas resources** — Based on a workshop co-sponsored by PTTC's Midwest Region, Michigan Satellite and the Michigan Oil and Gas Association, September 23, 2004 in Grand Rapids, MI.

**Petroleum Geology of the Deepwater Jackfork Group and Atoka Formation; Petroleum Geology of Deepwater Depositional Systems** — Based on a workshop sponsored by PTTC's South Midcontinent Region, August 18, 2004, Norman, OK.

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

**December**

Illinois Workshop Focuses On Field, Pumpers Who Make It Happen

**November**

Workshop Examines O&G Potential Remaining in Michigan Basin

**October**

Polymer-Gel WSO Proves Effective At Reducing Water Production

**4th Quarter 2004 Case Studies Petroleum Technology Digest**

**Surface geochemical results complement conventional development approaches (December)**

**Ejector vapor recovery unit reliably and economically recovers vent and flash gas (November)**

**Coiled compositeline pipe: an attractive injection system replacement (October)**

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 [lcoble@pttc.org](mailto:lcoble@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  
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Nov. 11	Barnett Shale Online Resources	<i>World Oil's</i> 2004 Awards	Major R&D Grants in Michigan, Pennsylvania and New Mexico
Oct. 7	Polymer-Gel WSO Treatments, What It Takes To Be Successful	Airborne 3D Microgravity Imaging For Exploration	Weyburn CO <sub>2</sub> Sequestration Project Moves to Phase II

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### January 2005

- 1/12 Eastern Gulf: *Sequence Stratigraphy for Explorationists* - Jackson, MS. Contact: 205-348-1880
- 1/19 North Midcontinent: *Unconventional Gas Resources in Kansas* - Wichita, KS. Contact: 785-864-7398
- 1/19 Midwest: *Practical Power Cost Reduction for Old Oil Fields* - Grayville, IL. Contact: 217-244-9337
- 1/27 West Coast: *Application of Innovative and New Technologies in Reservoir Characterization* - Valencia, CA. Contact: 213-740-8076
- 1/27 Central Gulf: *Low Cost Oil and Gas Recovery Methods* - Shreveport, LA. Contact: 225-578-4538
- 1/28 Rocky Mountain: *Hydraulic Fracturing* - Vernal, UT. Contact: 303-273-3107
- 1/28 Rocky Mountain: *GeoGraphix Overview and Refresher* - Golden, CO. Contact: 303-273-3107

### February 2005

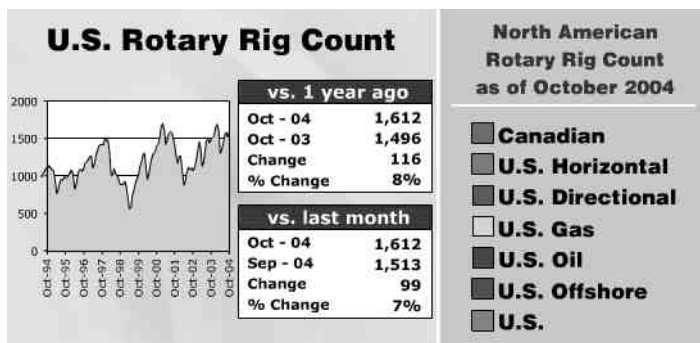
- 2/3 Rocky Mountain: *GeoPlus PETRA, Mapping & Display Techniques for Intermediate Users* - Golden, CO. Contact: 303-273-3107
- 2/7 Eastern Gulf: *Interpreting Seismic Data on KINGDOM 2d/3d PAK Workstations* - Raymond, MS. Contact: 205-348-1880
- 2/8-9 South Midcontinent: *4th Annual Meeting of Oklahoma Aggregates Association* - Oklahoma City, OK. Contact: 405-325-3031
- 2/10 South Midcontinent Lunch and Learn (SPE Fort Smith, Arkansas Oil & Gas Commission): *Hydraulic Fracture Design, Treatment and Application, Lessons Learned from Case Studies* (Distinguished Lecturer) - Fort Smith, AR. Contact: 405-325-3031
- 2/17 Rocky Mountain: *GeoPlus PETRA, Cross Section Techniques for Intermediate Users* - Golden, CO. Contact: 303-273-3107
- 2/17 West Coast: *Modern Completion Practices* - Valencia, CA. Contact: 213-740-8076
- 2/23 South Midcontinent: *Deep Gas Well Stimulation* (Pinnacle Technologies Inc.) - Norman, OK. Contact: 405-325-3031
- 2/24 Rocky Mountain core workshop: *Valley-Fill Sandstone Reservoirs* (USGS Core Research Center) - Denver, CO. Contact: 303-273-3107
- 2/25 Rocky Mountain: *GeoPlus PETRA, Engineering Tools for Intermediate Users* - Golden, CO. Contact: 303-273-3107
- 2/28-3/2 Rocky Mountain: *2005 Gas Well Deliquification* (Texas Tech University, Artificial Lift Research and Development Council, Southwestern Petroleum Short Course) - Denver, CO.

### March 2005

- 3/1 Texas/Southwest: *Production Data Gathering* - Midland, TX. Contact: 432-552-3432
- 3/2 Central Gulf/Texas: *Controlling Sand Production* - Houston, TX. Contact: 512-471-0320
- 3/2 Midwest: *SPCC Compliance Workshop* - Grayville, IL. Contact: 217-244-9337
- 3/3 Southwest/Texas: *Production Data Gathering* - Farmington, NM. Contact: 505-835-5685
- 3/8 Appalachian: *Introduction to Carbonate Reservoirs* (Pittsburgh Association of Petroleum Geologists) - Pittsburgh, PA. Contact: 304-293-2867 x5446
- 3/16-17 Eastern Gulf: *GeoPlus PETRA Basic Training for Beginners* - Raymond, MS. Contact: 204-348-1880
- 3/31-4/2 West Coast: *Independents' Day @ SPE Western Regional Meeting* - Irvine, CA. Contact: 213-740-8076
- 3/TBD Central Gulf workshop and field trip: *Louisiana Coalbed Methane* (ULL Energy Institute, Louisiana Geological Survey) - Natchitoches, LA. Contact: 225-578-4538

## Per Baker Hughes, as of October 2004

[www.bakerhughes.com/investor/rig/rig\\_na.htm](http://www.bakerhughes.com/investor/rig/rig_na.htm)



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