

# VEHICLES OF OIL AND GAS TECHNOLOGY TRANSFER FOR THE INDEPENDENT OIL AND GAS OPERATOR

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## ABSTRACT/INTRODUCTION

The Petroleum Technology Transfer Council (PTTC) is a national organization established in 1993 to provide technology transfer to independent oil and gas operators. The organization is a funded partnership between DOE, state agencies and industry, which is headquartered in Houston with 10 regional offices serving all producing states. The PTTC Texas-Permian Basin was established in 1999 to assist the PTTC Texas RLO; the Bureau of Economic Geology.

This paper will discuss the methodologies PTTC has utilized for transferring technology. The primary vehicles include workshops developed to address specific industry needs, case studies that represent proven technologies and industry's method of two-way beneficial sharing, and personal contacts via phone, fax, email, or websites. The PTTC Texas-Permian Basin workshop topics proven widely successful include new vapor recovery techniques, computer mud logging techniques, horizontal drilling technology, and wellbore management practices.

## PTTC BACKGROUND

PTTC was the result of the Independent Petroleum Association of America's (IPAA) action plan, spurred on by a lot of independent producers, to have DOE provide and fund an organization that would assist the independent in receiving technical solutions to upstream operating problems. In years past the independent operator benefited greatly from the research and technology development of the major oil companies. However, the major oil companies started cutting those efforts severely and there was a need to establish a program to assist the independent oil and gas operators.

When first begun, the term "information clearinghouse" was often used to describe what PTTC did. That is still an important part of what PTTC does, but we have evolved to much more. Our focus was then (and still is) to get information into the producer's hands at a very low cost. The evolution of PTTC involved heavy interaction and dialog with industry, forging working relationships. A reputation has been built and with that comes a professional expectation which industry has come to rely on. Being driven by producers means following their guidance on things as simple as "what workshop topics to select" to more complex strategic directions that shape PTTC for years to come. More than anything, PTTC is people.

## ABOUT PTTC- PTTC MISSION

PTTC benefits the nation by helping U.S. Independent oil and gas producers make timely informed technology decisions. PTTC doesn't actually help them make their technology decisions, but we do work hard to provide them with unbiased technology information and quick response so they can make their own timely decisions with confidence.

Although the focus is on independents, interested majors are also served. And interactions with the technology providers (service companies, government R & D, academia, etc.) are integral to connecting the producers and providers. And PTTC works in concert with trade associations, professional societies, and other national organizations to help make this all happen—assuming what some would describe as a "catalyst" role.

## PTTC STRUCTURE

- **Board of Directors** are 23 Board Members representing national leadership, the 10 PTTC Regions, major professional societies, independents (IPAA), majors, and service companies.
- **Producer Advisory Groups (PAG)**, typically 12-20 members per region, guide the efforts of the Regional Lead Organizations, allowing each regional program to be correctly tailored for their localized needs, and their respective core services.
- **Regional Lead Organizations**, each with a tech transfer/technology reputation and network of contacts within their respective regions, lead PTTC's efforts within the 10 regions.

- Field Agents are localized Program Directors within a Regional Lead Organization designed to assist in PTTC efforts in a special producer area.
- Headquarters Staff play key roles in addition to expected administration and organization functions by building name recognition, national tech transfer, and future strategic directions.

### BOARD OF DIRECTORS

The board is producer driven with 13 independent companies, and one major (Chevron-Texaco) operator. Also there are 6 association affiliates from SPE, AAPG, SEG, GTI, IPAA, and IOGCC, all being major associations. PTTC also has a service company representative (Schlumberger). So much technology to independents comes now from the service sector and communications with this segment of the business is increasingly an important piece of the independent producers business plan. One Regional Lead Director sits on the board, which is currently the North Mid-continent Regional Lead at the Kansas University Energy Research Center.

### PAG MEMBERS

Please see figure 1. This is just a sampling of the companies represented on our regional Producer Advisory Groups, more than 160 nation wide in the 10 regions. This important mix of producers and solution providers provides a critical direct connection to industry.

### REGIONALLY-FOCUSED

Please see figure 2. This is the PTTC region map showing the 10 Regional Lead areas that we have been talking about. The regions are where the action is and where the producers interface most directly with PTTC. Geographic extent of each region considers both geologic/technology similarities and political realities.

### REGIONAL LEAD ORGANIZATIONS

The makeup of these Region Lead Organizations (RLO) consist of; a director who is experienced, respected, and known regionally for his expertise, a strong support staff with geological and petroleum engineering backgrounds that provide a quick information response resource center, and a strong infrastructure support system. The RLO interacts with PAG to develop regional programs.

### PTTC CORE SERVICES

- **Problem Identification** by listening to producers and helping them clarify their own understanding of their needs, and commuting those needs to the technology provider/developer.  
This takes on many forms, from formal PI workshops held soon after PTTC began, to surveys (1999), to ongoing interaction with producers regionally and nationally. Please see figure 3. This reflects findings from a survey by *The American Oil and Gas Reporter*; reported in January 2001. These are the technologies independent producers consider most beneficial/needed for their bottom lines. It shows the emphasis on those technologies during rising product prices and what can get production on quickly from existing investments.
- **Awareness/Education** also takes many forms, from one-on-one conversations to referral to appropriate literature to workshops where producers learn from experts and each other. It is not just the leading edge technologies that are sought out. PTTC has discovered that the solutions are often found in existing technologies or best practices, but for whatever reason were not used. Please see figure 4. As industry asked for more workshops, PTTC responded. We are approaching 150 per year and looking at more workshops with local area interest. It is these forms of proven solutions that when presented can be implemented by other producers for quick impact. Like the trade associations, we're bottom-line oriented, but we restrict ourselves to the technical arena. In the technology realm, PTTC provides just enough technical information about solution options for individuals to make decisions, leaving technical intricacies to the professional societies. Informal networking and encouraged sharing at PTTC events allows individuals to learn as much from each other as from the experts. Often, this interaction strengthens the expert's understanding as well.
- **Connections** — PTTC doesn't pretend to know it all, but we are good at finding appropriate technologies, individuals, and organizations that we refer individuals to in an unbiased fashion.  
Industry contacts. Please see figure 5. This chart illustrates increasing usage of our websites. Data, which exclude the national website, are shown since the end of 1998, but the growth has been consistent since the beginning. PTTC recognizes the value of this tool in reaching a massive audience

and is placing high priority in improving the consistency, content and capabilities offered through its website system.

**Other connections/ monthly user sessions.** Please see figure 6. PTTC connects with individuals in many ways—through personal interaction during workshops and in responding to inquiries, through the printed word (reports and newsletters), and the electronic world (e-mail, website network). The regional resource center, originally thought to be a physical place, has evolved into a virtual center for the people working within PTTC.

As can be seen from this slide we've been stressing personal interaction—answering questions, encouraging application, etc. PTTC's regions make more than 16,000 contacts a year. This equates to more than 64 contacts/day/region. This includes phone calls, e-mails, and talks with industry players who need information quickly and concisely. Our goal is to respond to inquiries within 24 hours.

### NATIONAL OUTREACH & TECH TRANSFER

Responding to industry's needs, technology transfer at the national level has become more prominent than originally envisioned. It reflects that, for many technologies, the information is universal or not specific to a given region. National exposure also creates the opportunity to reach larger audiences. Listed below are current prominent outreach and tech transfer programs. Again, our goal is to increase name recognition, nationally transfer technology and through industry feedback on these activities, derive future opportunities and strategic direction for the organization.

- **PTTC Network News.** Please see figure 7. *PTTC Network News* is mailed to over 7,100 individuals—nearly three fourths are from industry; 65 % independents and 8% majors. Service and supply companies are 14% with the remainder representing various categories of consultants. Follow up contacts with some of the technology providers indicate successful responses. In a recent issue a company received over 20 qualified leads within 2 weeks of the newsletter distribution.
- **Petroleum Technology Digest.** Please see figure 8. Independents have always wanted case studies, and most regional workshops include one or more. *The Petroleum Technology Digest* was initiated in 1999 to report PTTC case studies as a supplement to *World Oil* magazine. Beginning with the recent September 2000 issue the case studies are now being published within *World Oil* itself on a quarterly schedule. Distribution is worldwide to more than 30,000 readers. PTTC will make reprints as a *Digest* twice a year. Those who do not receive the hardcopy can (1) request one from PTTC or (2) access it electronically on *World Oil's* website (linked from PTTC home page [www.pttc.org](http://www.pttc.org)).
- **Solutions From the Field.** This periodical summarizes solutions presented in regional workshops. Focus is on capturing technology insights shared by workshop speakers for a broader audience, online in a technology archive or through periodic printings. Should readers desire further information, contact information for speakers is provided.
- **National website.** The national website [www.pttc.org](http://www.pttc.org) has an abundance of information available on PTTC activities such as the calendar listing of all workshops in the US. Also there are links to Tech info, Oil and Gas Data, funding acknowledgements, past newsletter articles, case studies from the *Petroleum Technology Digest*, tech inquiries, and special alerts.

### REGIONALLY-FOCUSED OUTREACH AND TECH TRANSFER

- **Newsletters.** Regional newsletters or columns in publications of producer groups still are needed, as all do not rely on the electronic world for maintaining their technology awareness. **All** regions have a newsletter function whether it is in a regional form or through other association newsletters. Combined distribution approaches 30,000.
- **Websites.** Some regions with a strong data emphasis and large user base experience very high usage levels—approximately 15 thousand sessions/month/region. The trend shows consistent growth. Total user sessions are over 57,000 per month.

### TAILORED OUTREACH APPROACHES

- **Field Agents/Area Program Directors**

The concept was implemented in 1999 as a pilot program in the Permian Basin to assist the Texas Region in technology transfer logistics in the Permian Basin. The Permian Basin, being such a large and concentrated oil and gas producing basin, was seen by the Texas PAG members and the PTTC Texas Region as premiere site for piloting the program. The Field Agent, PTTC Texas- Permian Basin- Program Director position, has not only been successful in Permian Basin activities, but has assisted in promoting technology transfer and outreach activities in the entire state of Texas and PTTC nationally.

With additional DOE funding through a PUMP (Preferred Upstream Management Practices) contract, PTTC is currently expanding this concept to two more regions, the West Coast and South Mid-continent (OK & AR). Focus is on one or small group interaction to determine primary oil production constraints, finding proven economic solutions, and transferring technology information through contacts, workshops, and the web. Follow-up contacts with industry will encourage application.

#### FIELD AGENT-PROGRAM DIRECTOR-PTTC TEXAS-PERMIAN BASIN

Specific activities of the Permian Basin Program Director in the past two years have been:

- Problem Identification Workshops Developed
  - New Computerized Mudlogging Technology
  - New Low Volume Vapor Recovery Technology
  - Wellbore Management
  - Energy/Electrical Cost Reduction Operating Practices
- Other workshops presented
  - Horizontal Drilling Technology
  - Digirule Cross-section Software
- Annual C02 Conference (CEED, SPE, and Industry)
- SPE Oil and Gas Recovery Conference
  - Paper, Poster Session, Booth
- Permian Basin International Oil Show-Poster and Booth Display
- Permian Basin SPE Section Board member
  - Chairman Awards and Nominations Committee
  - Judge of Texas Tech Student SPE papers
- southwestern Petroleum Short Course
  - Paper for 2002
- Artificial Lift Optimization Consortium
  - Presentation at Artificial Lift Workshop Permian Basin
- Applied Petroleum Technology Academy-Acting Director
- Case Study Development for the *Petroleum Technology Digest* on Walking Beam Compressors and Vapor Recovery

#### PERMIAN BASIN PTTC NEWS SOURCES

- **Local Website** [www.energyconnect.com/pttc/pb](http://www.energyconnect.com/pttc/pb)
- **National PTTC website** [www.Dttc.org](http://www.Dttc.org)
- **PTTC Texas News Letter-Producer News**
- **Midland Reporter Telegram-Sunday Oil Report** [www.mvwesttexas.com](http://www.mvwesttexas.com)
- ***Petroleum Technology Digest- World Oil***
- **PBPA newsletter**
- ***The American Oil and Gas Reporter***
- **PTTC national newsletter** *PTTC Network News*

#### ACKNOWLEDGMENTS

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<p> Arrowhead Exploration  Summit Energy  Marathon Oil  Paramount Petroleum  Pruet Oil  Nordan Oil &amp; Gas  Spooner Petroleum  Kelton Oil  Belden &amp; Blake  Oxford Oil  Jarvis Drilling  MEPCO Inc  Howard Energy  Miller Oil  Colt Energy  Russell Petroleum  Gore Oil  Vess Oil  Keen Oil  OneOk Resources  Trans Pacific Oil  Texaco </p>	<p> Sensor Oil and Gas  Comanche Energy  Devon Energy  Bays Exploration  Midwest Energy Corp  Apache Corp  Enron Oil and Gas  Chevron USA  Russell Petroleum  Seneca Resources Corp  Ocean Energy  Tidelands Oil Production  Schlumberger Technical  Services  BJ Services  WZI Inc  Baker Hughes  Baroid Drilling Fluids  Baker Petrolite </p>
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Figure 1 - PAG Members

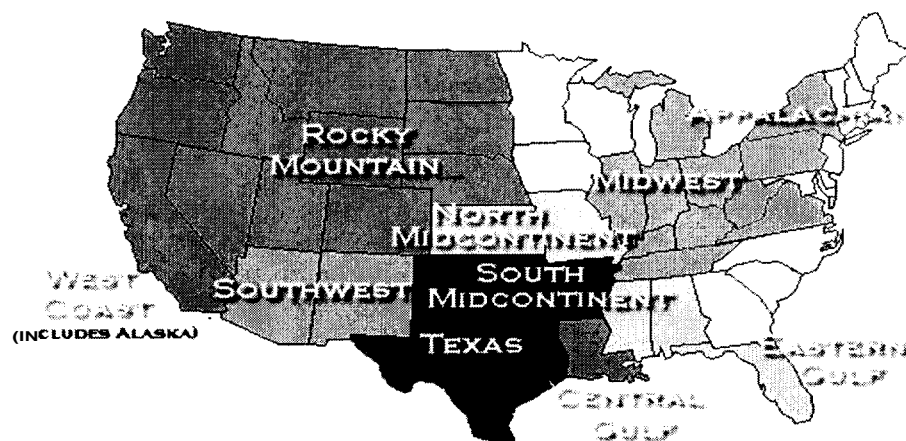


Figure 2 - PTTC Region Map

- Internet/E-Commerce
- Seismic/Geophysical
- Horizontal/Directional Drilling
- Under Balanced Drilling
- Logging/Formation Evaluation
- Fracturing/Stimulation
- Reservoir Management/4-D
- Production Automation
- Enhanced Recover!

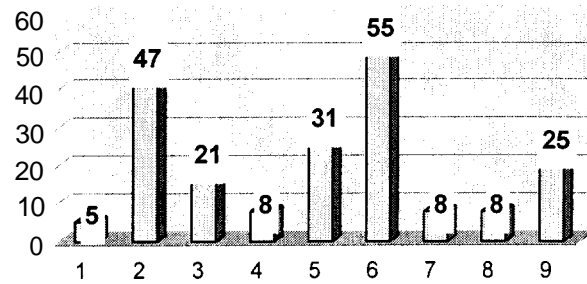


Figure 3 - Beneficial Technologies

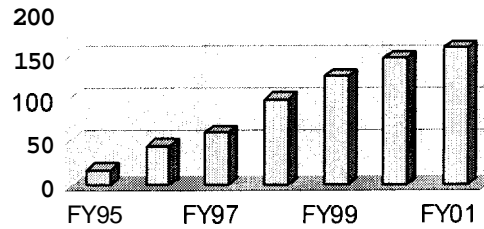


Figure 4 - Number of Technology Workshops

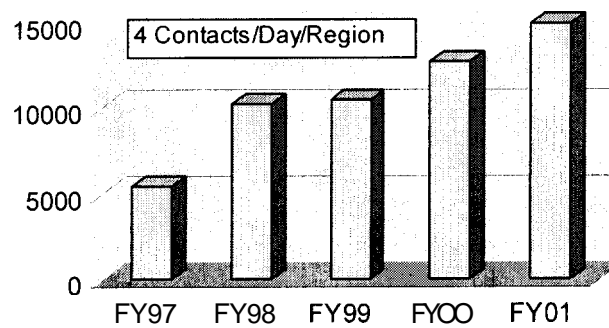


Figure 5 - Industry Contacts.

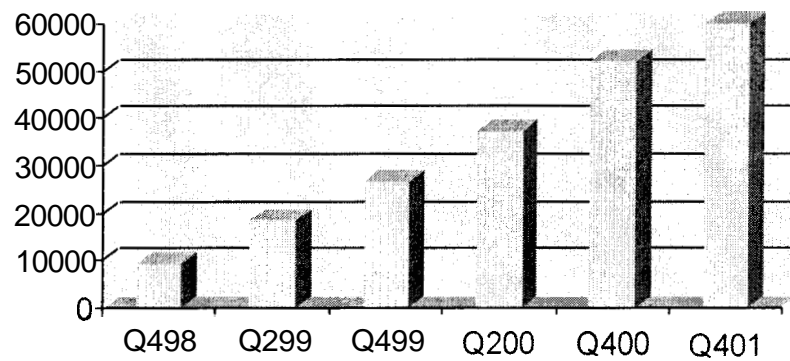


Figure 6 - Number of Monthly User Sessions

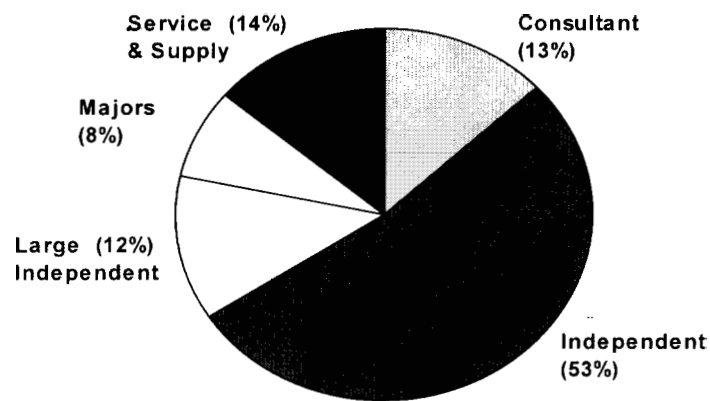


Figure 7 - Distribution of PTTC Network News



Figure 8 - Petroleum Technology Digest