

Petroleum Technology Transfer Council

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Targeted Technology Transfer to US Independents

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EXECUTIVE SUMMARY

The Petroleum Technology Transfer Council (PTTC) is a unique not-for-profit network that focuses on transferring Exploration and Production (E&P) technology to the domestic oil and natural gas producing industry. PTTC connects producers, technology providers and innovators, academia, research and development (R&D) consortiums and governments. Local affordable workshops delivered by Regional Lead Organizations (RLOs), which are typically a university or geological survey, are a primary tool. PTTC also maintains a website network, issues a national newsletter, provides a column in a major trade publication, and exhibits at major industry events. It also encourages industry to ask technology-related questions, striving to find relevant answers that will save questioners significant time.

Working since late 1993, the PTTC network has a proven track record of providing industry with technology insights they can apply. Volunteers at the regional and national level provide key guidance regarding where to focus technical effort and help connect PTTC with industry. At historical funding levels, PTTC had been able to hold well more than 100 workshops per year, drawing 6,000+ attendees. As funding decreased in the early 2000s, the level of activity decreased and PTTC sought a merger with the American Association of Petroleum Geologists (AAPG), becoming an AAPG-managed organization at the start of FY08. This relationship with AAPG was terminated by mutual consent in May 2011 and PTTC once again operates independently. Chris Hall, California continued to serve as Chairman of the Board of Directors until December 2013. At the time PTTC reorganized into a RLO led organization with Mary Carr and Jeremy Viscomi as co-Executive Directors. Jerry Anderson became the Chairman of the PTTC Board of Directors and Chris Hall continues to serve on the Board. Workshop activity stabilized at 55-65 workshops per year averaging 3,100 attendees.

FY14 represented the fifth year in a multi-year contract with the Department of Energy (DOE) for providing technology transfer services. This report summarizes activity and results during for five years, FY10 through FY14.

In FY12 changes occurred in responsibilities of consultants serving HQ, because funding was reduced below the threshold level of \$500,000 audits were no longer required and consultant time was reduced on the primary contract. Contracts for Permian Carbon Capture Utilization and Storage (CCUS) training, and providing tech transfer services to the Research Partnership to Secure Energy for America (RPSEA) provided work that enabled HQ to retain services of regular consultants. Both CCUS and RPSEA were five year contracts with PTTC, and providing services for these DOE funded contracts provided synergy for PTTC and the oil and gas industry.

With further decreases in DOE funding the regions conducted workshops with no PTTC funding starting in June FY11. Since 2011 the number of workshops has declined from 79 in FY10 and FY11 to 49 in FY12, and risen to 54 in FY13 and 63 in FY14. The attendee's numbers dipped slightly below 3,000 per year in FY 10, FY12, and FY13, but rose to over 3,800 in FY 11 and 3105 in FY14.

Quantitative accomplishments: PTTC has maintained its unique structure of a national organization working through Regional Lead Organizations (RLOs) to deliver local, affordable workshops. During the contract period PTTC consolidated from 10 to five regions to increase efficiency, and because no active RLO's would be maintained in the Central and Eastern Gulf Coast regions. RLO's for the regions are located at: **Eastern** - West Virginia University, (Illinois Geol. Survey., W. Michigan Univ. FY10-12); **Midwest** created in FY13 - Illinois Geological Survey, W. Michigan University; **Midcontinent** - University of Kansas, expanded to Houston, TX (2013-14); **Rocky Mountain** - Colorado School of Mines; **Texas/SE New Mexico** (FY10-FY11) - Bureau of Economic Geology, Univ. of Texas at Austin; **West Coast** - Conservation Committee of California O&G Producers.

		Number of workshops	Number of Attendees
Central/Eastern Gulf	HQ conducted	1	24
Eastern		33	2601
Midwest		6	871
Midcontinent		58	2957
Rocky Mountains		102	3968
Texas/SE New Mexico		10	334
West Coast		71	2698
HQ		43	1632

At the national level HQ went from an office in Houston to a virtual office in the Tulsa, Oklahoma area. AAPG provided physical assets and oversight in FY10 and FY11. PTTC produced a quarterly 16-page *Network News* newsletter that was mailed out through June FY12, when it was converted to electronic format and e-mailed to subscribers. *Network News* highlights PTTC workshops and events, new advances in technology, and six website Technology Centers. PTTC also produces the *Tech Connections* Column in *The American Oil & Gas Reporter*, with a circulation of 13,000. On a weekly basis the electronic *Email Tech Alert* goes out to 6,000 readers. The national staff also maintains a central website with information of national interest and individual sections for each of the PTTC regions.

In FY14 the PTTC website was redesigned and the new website was rolled out in April 2014. The new design focuses on PTTC workshops and regional activity.

The national organization also provides legal and accounting services, coordinates the RLO activities, exhibits at major national and other meetings, and supports the volunteer Board as it provides strategic direction. Major changes at the National level occurred in 2011 when Lance Cole stepped down as the Operations Director to Technology Manager. He was replaced by Dr. William Lawson as the Executive Director until December 2013. Lance Cole resigned in 2012 and Viola Schatzinger became the Operations Manager, later Technology Manager. In the fall of 2013 PTTC reorganized and RLO's Mary Carr and Jeremy Viscomi became the Co-Executive Directors. Kathy Chapman became the Director of Operations.

1.0 INTRODUCTION

The Petroleum Technology Transfer Council (PTTC) was established by domestic crude oil and natural gas producers, working in conjunction with the Independent Petroleum Association of America (IPAA), the U.S. Department of Energy (DOE) and selected universities, in 1994 as a national not-for-profit organization to transfer Exploration and Production (E&P) technology to the domestic upstream petroleum industry. Coordinated by a national staff, PTTC focuses on delivering local affordable workshops, working through universities/geological surveys in regions that cover producing areas of the U.S. Complementing the workshop program, PTTC maintains a strong web presence, newsletter, and exhibit and communications program.

From inception PTTC has received federal funding through DOE's oil and natural gas program managed by the National Energy Technology Laboratory (NETL). Funding was strong during early years and PTTC was able to deliver well more than 100 workshops per year, drawing 6,000 or more attendees per year. In FY07 PTTC negotiated with the American Association of Petroleum Geologists (AAPG) for PTTC to become a subsidiary organization of AAPG and for AAPG to manage PTTC, which would bring organizational and financial resources to bear to provide a longer-term future for PTTC. The changeover to an AAPG-managed PTTC occurred at the very end of FY07. The relationship with AAPG was terminated by mutual consent in May 2011 and PTTC once again operates independently. In FY13 PTTC reorganized into a RLO led organization to provide more efficient organizations of workshops and technology transfer activities.

Organizational changes in PTTC during the five-year contract began with the resignation of Lance Cole as Operations Director in early FY11. Dr. William F. Lawson was named Executive Director in April 2011 and served in that capacity until December 2013. Viola Schatzinger became the Operations Manager until the resignation of Lance Cole in the summer of 2012, when she became Technology Manager. In December 2013 Kathy Chapman was named Director of Operations. Mary Carr and Jeremy Viscomi became the co-Executive Directors. Chris Hall resigned as Chairman, but remained on the Board of Directors. Jerry Anderson became the chairman of the PTTC Board of Directors.

PTTC also received an award from DOE (4 year contract) to provide, with partners, CCS Regional Training in the Permian Basin. The CCS contract expanded to regional training at Universities across the country and three Annual conferences where graduate students were sponsored by industry to attend and hear presentations on Carbon Capture, Utilization and Storage.

In FY10 PTTC signed a 5-year contract to provide tech transfer services to the Research Partnership to Secure Energy for America (RPSEA). This work included developing a RPSEA website, organizing and participating in workshops and RPSEA tech transfers activities and exhibits. The work enabled PTTC to retain services of regular HQ consultants and provided a synergy in promoting DOE funded research through RPSEA.

In FY11 PTTC's funding was reduced and the RLOs adapted to a non-subsidized business model with higher workshop attendee fees. Since 2011 the number of workshops has declined from 79 in FY10 and FY11 to 49 in FY12, and risen to 54 in FY13 and 63 in FY14. The attendee's numbers dipped slightly below 3,000 per year in FY10, FY12, and FY13, but rose to over 3,800 in FY11 and 3105 in FY14. Attendance levels averaged 3,100 over the 5-year contract, which reflects favorably with attendance during the previous 5-year contract from 3,100-3,600 and substantial workshop funding.

Table 1 outlines PTTC's regional history since inception. Initially, there were 10 regions. When financial stress came during FY06, reorganizations occurred for cost control and efficiency and PTTC went to six regions in FY08. Further consolidation to five regions occurred FY12 after PTTC separated from AAPG.

Figure 1 shows the Historical PTTC workshop activity from 1995 through 2014. **Figure 2** shows the reorganization of PTTC regions, which was finalized in 2013.

Section 2.0 provides further discussion of workshop activity. **Section 3.0** describes the national program.

Figure 1 – Historical Workshop Activity and Attendance from Inception

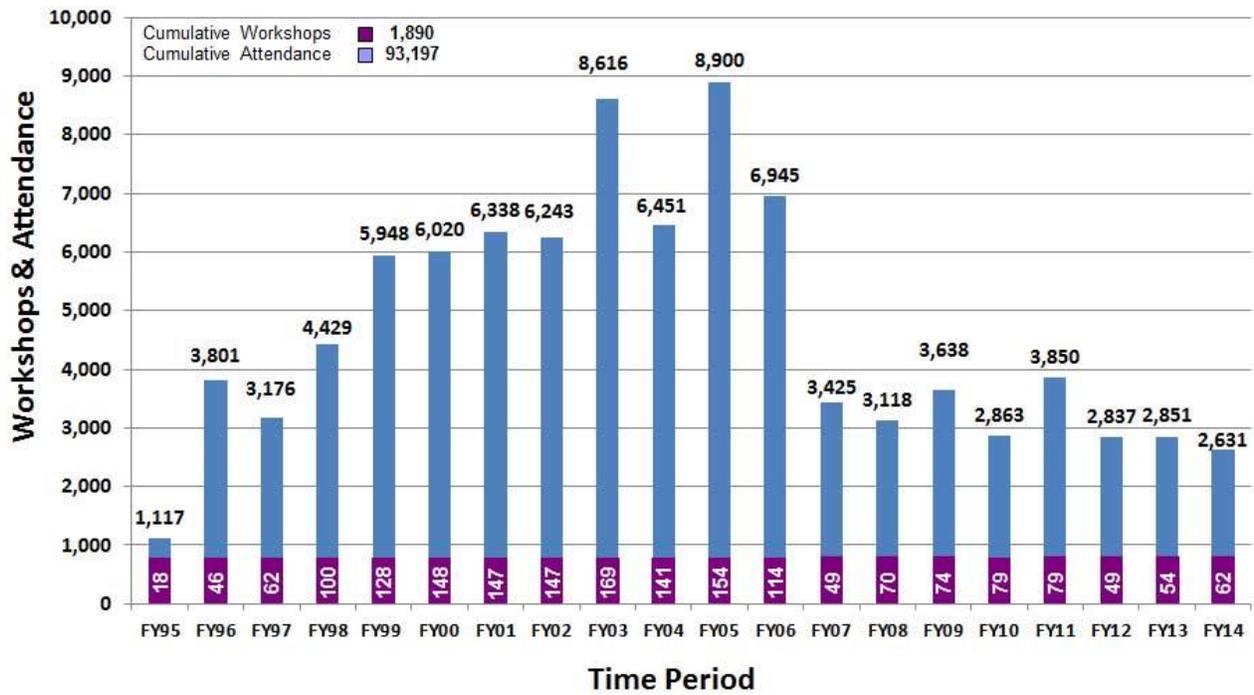


Figure 2 – PTTC Regional Map

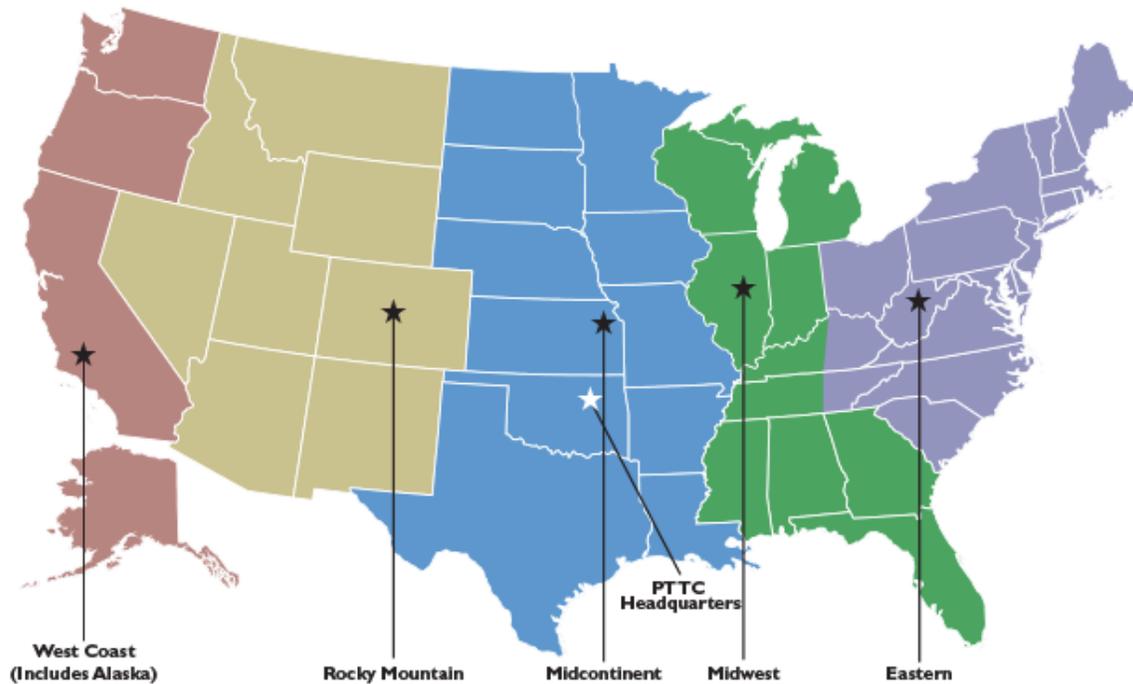


Table 1 – PTTC Regional Structure

Region	Regional Lead Organization (RLOs)	Explanatory Comments
Eastern	<ul style="list-style-type: none"> • West Virginia University 	WVU has been part of PTTC since inception. The Eastern Region is managed by Dr. Doug Patchen, WVU-NRCCE.
Midwest	<ul style="list-style-type: none"> • Illinois State Geological Survey (lead) • Western Michigan University 	Both RLOs have been part of PTTC since inception. ISGS is the lead Midwest RLO and is led by Joan Crockett.
Midcontinent	<ul style="list-style-type: none"> • University of Kansas, Tertiary Oil Recovery Project 	The University of Kansas has been part of PTTC since inception. Jeremy Viscomi is the regional director for PTTC.
Rocky Mountain	<ul style="list-style-type: none"> • Colorado School of Mines 	The RLO has been part of PTTC since inception. Dr. Mary Carr leads the Rocky Mountain Region at CSM.
West Coast	<ul style="list-style-type: none"> • Conservation Committee of California Oil & Gas Producers (CCCOGP) 	CCCOGP began serving as RLO starting FY08; the RLO is led by Jerry Anderson.
There are 5 PTTC Regions and the National office.	PTTC reduced its number of Regions in order to better monitor and manage its services, as well as to reduce costs.	All RLO Directors (5) represent their Region as members of the PTTC Board of Directors.

2.0 WORKSHOP ACTIVITY

Regional Lead Organization (RLO) Directors have three primary responsibilities: (1) identify the technology information needs or topics of interest to their regional audience, (2) develop an annual workshop plan to deliver the information and (3) execute the plan and deliver the workshops. Headquarters PTTC coordinates workshops on a National level, organizing workshops with National /regional organizations and in underrepresented states or regions of the United States.

2.1 Regional Workshops

Workshop topics in the exploration and production (E&P) realm are influenced by feedback from prior workshop attendees, and the RLO Director's personal experience. The focus is on satisfying the technology information needs of PTTC's primary audience, which are smaller independent operators. Each fiscal year PTTC's Regional Lead Organizations (RLOs) develop workshop plans and arrange for speakers that answer the needs of attendees. The trend since during this 5-year contract has been to partner with established regional organizations and hold workshops in conjunction with other meeting. This has helped raise attendance at the PTTC workshops and has introduced PTTC workshops and publications to people that might not otherwise attend or subscribe. Highly successful joint events have been held in the Midwest, Rocky Mountain and Midcontinent regions.

The impact of the financial and organizational changes upon the regions varied significantly during the 5 year period. The Central/Eastern Gulf Region was unable to find functional RLO's and has been absorbed into the Midcontinent and newly created Midwest regions. The Eastern Region was able to continue workshops at a reduced rate in the redefined region. The emergence of the Marcellus and Utica shale plays has increased local attendance in the Eastern region. The Midwest region was split out in FY12 and workshops continued to be held in Michigan and Illinois/Indiana, primarily associated with regional conferences. Changes to the Midcontinent Region were dramatic when the Oklahoma Geological Survey declined to participate in PTTC (FY09) and later the University of Tulsa withdrew (FY12). This gap in the southern portion of the Midcontinent Region (Oklahoma and Arkansas) led to being absorbed into the Midcontinent region. In the Rocky Mountain Region workshop activity and attendance has remained strong. The new business model for the Rocky Mountain regions has most workshops being held in the Denver area. Fortunately, Denver is the hub of E&P activity for the region, including the shale boom in the Bakken and Niobrara. The Texas/Southeast New Mexico Region experienced a dramatic drop in activity level when workshop funding was reduced in FY11 and the Bureau of Economic Geology; The University of Texas at Austin became inactive. In FY12 the Texas region was combined into the Midcontinent region. Shale activity in the Eagle Ford play and the Permian Basin of Texas has led to a number of workshops in Texas in FY13 and FY14. The West Coast Region maintained a steady number of workshops and attendance throughout the five year period holding workshops in southern California, and in 2011 a series of workshops in Alaska in conjunction with the SPE/AAPG Western Regional Conference.

2.2 Headquarters Workshops

PTTC Headquarters (HQ) was active in developing and participating in workshop throughout the 5-year contract. In FY10-11 a series of traveling workshops were developed coordinating with Stripper Consortium and RPSEA projects at the request of NETL. Throughout the contract HQ staff developed and coordinated workshops in underdeveloped regions and on requested NETL research topics. In FY11 a workshop was held in Alaska to focus on Arctic concerns and Alaskan geology.

In FY12-FY13 PTTC HQ partnered with Energy Forum to sponsor a series of three workshops, MORE, to promote NETL projects active in Enhanced oil Recovery. The MORE workshops were held in Dallas, Long Beach, and Denver. PTTC HQ staff gave presentations in addition to presentations by NETL and RPSEA project principal investigators.

In FY12 and FY13 PTTC Headquarters developed a series of workshop and webinars tied to SPE and AAPG regional events and the IOGCC national conference focused on Seismic activity and EOR technologies. Speakers were solicited from industry and state organizations with expertise on the topics.

During FY10-FY13 PTTC headquarters staff worked in synergy with the CCS contract to provide extensive student outreach at university presentations and in three Annual conferences.

In FY14 the Executive Directors joined with ASME to promote a 3day conference in San Diego, CA. PTTC organized four workshops for the event and sufficient attendees registered for three of the workshops.

In Partnership with Houston Advanced Resource Center (HARC) to PTTC conducted several workshops on Reduction of gas flaring. The Executive Directors and RLO's organized and conducted the events in three regions during the 3rd and 4th quarters FY14.

Regional and National attendance and activity for the period FY10 through FY14 by region for the six (five) regions is summarized in **Table 2**.

During the five-year contact a total of 332 workshops were held with total attendance of 15,506. With decreases in DOE funding the regions conducted workshops with no PTTC funding starting in June 2011. Since 2011 the number of workshops has declined from 79 in FY10 and FY11 to 49 in FY12, and risen to 54 in FY13 and 63 in FY14. The attendee's numbers dipped slightly below 3,000 per year in FY10, FY12, and FY13, but rose to over 3,800 in FY11 and 3105 in FY14. The average attendance was 3100 per year with 85 % from industry. State officials made up the majority of non-industry attendees.

Table 2 – Individual Region Activities

PTTC Eastern Region

Topic (main cosponsors in parentheses)	Location	Date	Attendance	
			Total	# (% ind.)
Workshop History: FY10 Attendance (12 events)			795	628 (79%)
Workshop History: FY11 Attendance (9 events)			900	684 (76%)
Workshop History: FY12 Attendance (4 events)			535	412 (77%)
Workshop History: FY13 Attendance (3 events)			121	96 (79%)
Workshop History: FY14 Attendance (4 events)			214	132 (62%)
FY14 Statistical Summary by Quarter				
	Workshops			Comment
	#	Attend	Industry No. (%)	
1st Qtr	0	0	0	
2nd Qtr	1	48	38 (79%)	
3rd Qtr	2	136	73 (54%)	
4th Qtr	1	30	21 (71%)	
FY14 YTD	4	214	132 (62%)	

PTTC Midcontinent Region

Topic (main cosponsors in parentheses)	Location	Date	Attendance	
			Total	# (% ind.)
Workshop History: FY10 Attendance (13 events)			519	496 (96%)
Workshop History: FY11 Attendance (10 events)			531	528 (99%)
Workshop History: FY12 Attendance (13 events)			976	936 (96%)
Workshop History: FY13 Attendance (8 events)			495	495 (100%)
Workshop History: FY14 Attendance (14 events)			436	436 (100%)
FY14 Statistical Summary by Quarter				
	Workshops			Comment
	#	Attend	Industry No. (%)	
1st Qtr	3	68	68 (100%)	
2nd Qtr	3	70	70 (100%)	
3rd Qtr	5	172	172 (100%)	
4th Qtr	3	126	126 (100%)	
FY14 YTD	14	436	436 (100%)	

PTTC Midwest Region (new as of 1st quarter 2013)

Topic (main cosponsors in parentheses)	Location	Date	Attendance	
			Total	# (% ind.)
Workshop History: FY13 Attendance (2 events)			368	368 (100%)
Workshop History: FY14 Attendance (3 events)			486	486 (100%)
FY14 Statistical Summary by Quarter				
	Workshops			Comment
	#	Attend	Industry No. (%)	
1st Qtr	0	0	0	
2nd Qtr	2	421	421 (100%)	
3rd Qtr	1	65	65 (100%)	
4th Qtr				
FY14 YTD	3	486	486 (100%)	

PTTC Rocky Mountain Region

Topic (main cosponsors in parentheses)	Location	Date	Attendance		
			Total	# (%) Ind.	
Workshop History: FY10 Attendance: (21 events plus 1 Futures Student Trng)			664	643 (97%)	
Workshop History: FY11 Attendance: (24 events)			994	974 (98%)	
Workshop History: FY12 Attendance: (16 events)			692	644 (93%)	
Workshop History: FY13 Attendance: (20 events)			912	899 (98%)	
Workshop History: FY14 Attendance: (21 events)			706	687 (97%)	
FY14 Statistical Summary by Quarter					
	Workshops			Comment	
	#	Attend	Industry No. (%)		
1 st Qtr	5	113	97 (89%)	FY14 Avg. Attendance = 34 vs. 46 in FY13	
2 nd Qtr	4	124	121 (98%)		
3 rd Qtr	6	297	297 (100%)		
4 th Qtr	6	172	172 (100%)		
FY14 YTD	21	706	687 (97%)		

PTTC West Coast Region

Topic (main cosponsors in parentheses)	Location	Date	Attendance		
			Total	# (%) ind.	
Workshop History: FY10 Attendance (14 events)			344	279 (81%)	
Workshop History: FY11 Attendance (13 events)			421	287 (68%)	
Workshop History: FY12 Attendance: (12 events)			491	292 (59%)	
Workshop History: FY13 Attendance: (17 events)			803	444 (59%)	
Workshop History: FY14 Attendance: (18 events)			664	465 (70%)	
FY14 Statistical Summary by Quarter					
	Workshops			Comment	
	#	Attend	Industry No. (%)		
1 st Qtr	2	92	40 (44%)	FY14 Avg. Attendance = 37 vs. 47 in FY13	
2 nd Qtr	8	194	153 (79%)		
3 rd Qtr	2	129	81 (63%)		
4 th Qtr	6	249	191 (77%)		
FY14 YTD	18	664	465 (70%)		

3.0 NATIONAL PROGRAM

There are six essential functions provided by Headquarters (HQ): (1) communications/technology transfer services, (2) outreach, (3) organizational management, (4) RLO coordination, (5) development of national level workshops, and (6) fund raising. Combined, these functions enable PTTC to be a fundamentally regional program with national strength.

3.1 Communications/Technology Transfer Services

Communications/technology transfer services provide synergy among regional programs, move technology across the U.S. and shorten the technology adoption cycle. Four regular services in the communications realm (**Figure 3**) are:

- *Network News newsletter*: Since inception PTTC has published a broadly circulated newsletter. Throughout FY10-FY13 length was 16 pages. The normal frequency was quarterly. During PTTC experimented with alternating “hardcopy” and “electronic only” issues, but due to financial considerations went to completely electronic copy in mid-FY12. Distribution for the final hard copy in June 2012 was 13,955. Circulation dropped, because there were no e-mail addresses for some people that had received the hard copy of the newsletter.
- *Tech Connections Column in The American Oil & Gas Reporter (AOG)*: The AOG publication specifically targets independent producers. Throughout the contract period, PTTC has written an invited column with content either (1) drawn from recent PTTC activities or (2) subjects known to be of high interest to industry. Authorship of the monthly article was originally Lance Cole, but with changes in the Executive Director position, William Lawson and Jeremy Viscomi have written the article since 2012. According to AOG’s, its qualified circulation as of mid-2009 was just over 13,000 readers.
- *Email Tech Alerts (weekly)*: Industry, DOE and PTTC technology highlights were provided through mid FY14. Calendars for upcoming PTTC and “other” events are listed. Several changes to the e-alerts occurred in FY13 and FY14 and the e-alerts became focused on promoting PTTC and RPSEA activities. In FY14 the e-alerts on emerging technologies and national news were eliminated. Circulation at the end of FY14 was 6,000 individuals.
- www.pttc.org: PTTC maintains an integrated website network consisting of a national section and five regional sections. Content includes organizational information, calendar information for PTTC and “other” events, technology information, historical workshop information, and industry links sections. Technology Centers were established on the website in FY10 and maintained until FY14. Some of the RLOs maintain a basic website for workshop promotion and registration within their regions. In FY14 PTTC rolled out a new redesigned website in April with a focus on PTTC workshops and regional activities.

3.2 Outreach

- Throughout the contract period PTTC maintained an active outreach and exhibit schedule, exhibiting at major professional society meetings, some trade organization meetings and at NAPE/summer NAPE (North American Prospect Expo). In early years PTTC exhibited at more than 10 events per year. Since 2011 PTTC has been more selective, still exhibiting at major industry events but overall reducing the number of shows covered to reduce costs. During FY10-11-12 PTTC exhibited with AAPG at Annual meetings. PTTC exhibited at the biannual International SPE IOR conference in Tulsa in 2010, 2012 and 2014. PTTC exhibited at the IPEC environmental conference from 2010 through 2013. PTTC exhibits at other state/regional trade association meetings if costs are low or creative swaps can be negotiated. PTTC and the Research Partnership to Secure Energy for America (RPSEA) on occasion will share booth space to control costs while still providing each organization an opportunity for exposure.

In FY14 in an effort to expand outreach, PTTC partnered with two other organizations.

- The Executive Directors joined with ASME to promote a 3day conference in San Diego, CA in March 2014. PTTC organized four workshops for the event and sufficient attendees registered for three of the workshops. Sponsorship for the workshops was raised by the West Coast RLO.
- PTTC partnered with Houston Advanced Resource Center (HARC) to conduct several workshops on Reduction of gas flaring. The Executive Directors and RLO's organized and conducted the events in three regions during the 3rd and 4th quarters FY14.

3.3 Organizational Management

- *Volunteer Board:* PTTC is a not-for-profit corporation whose activities and staff are directed by a volunteer Board. Prior to coming under AAPG's umbrella, PTTC had a large independent Board with more than 20 members. In the transition to becoming a subsidiary of AAPG, PTTC's Bylaws were revised and Board size was reduced to seven members. PTTC's Board functioned independently, but certain actions (Chair, Board membership, annual budget) are subject to review and confirmation by AAPG's Executive Committee during the association. Following the Separation from AAPG PTTC retained a smaller Board of Directors from FY12-FY13. In a given year, PTTC's Board typically meet once time in person (usually at the AAPG Annual Convention), plus three or four teleconferences.

In FY13 PTTC underwent a major organization change. Under the direction of Board Chairman, Chris Hall, and with the agreement of Board members and RLO's; PTTC became a RLO guided organization. Jerry Anderson became the PTTC Chairman of the Board of Directors. Chris Hall remained on the Board as an advisor. Mary Carr and Jeremy Viscomi became the co-Executive Directors. At the end of FY14, Jeremy Viscomi resigned as Executive Director, retaining his position as Midcontinent RLO. Mary Carr is the current Executive Director.

- *Staffing:* PTT headquarters is staffed with consultants rather than employees. PTTC effectively became a virtual organization and remained so at the end of the contract. PTTC moved records and equipment to Tulsa at AAPG through the 2nd quarter FY12. Following separation from AAPG PTTC rented a nominal office and storage space in Tulsa through the 2nd quarter FY14. AAPG managed PTTC through a services contract with Susan Nash, AAPG's Director of Education and Professional Development serving as Principal Investigator for PTTC until the 3rd quarter FY11. Regular consultants at the beginning of the 5 -year contract were Operations Manager Lance Cole, Director of Business Affairs Kathy Chapman, Technical Consultants Dwight Rychel and Viola Rawn-Schatzinger, and webmaster/publications/administrative support person Kristi Lovendahl. As needed, PTTC retained additional technical and administrative support consultants. The functions of part time consultants included graphics assistance, and giving presentations at National or regional conferences.

In FY12 Lance Cole stepped down and Dr. William Lawson became Executive Director of PTTC. Viola Rawn-Schatzinger became the Operations Manager and Lance Cole became Technology Manager. In FY13 Lance Cole resigned, Viola Rawn-Schatzinger became Technology Manager. Under the new RLO led board, William Lawson resigned, and Kathy Chapman became the Director of Operations. Dwight Rychel and Kristi Lovendahl remained as consultants.

- *Contractual Reporting:* In FY10-11 Operations Manager Cole has primary responsibility for required technical reporting, while Director of Business Affairs Chapman has primary responsibility for contract financial reporting. During FY 12- FY14 Viola Rawn-Schatzinger and Kathy Chapman has responsibility for technical and financial reporting under the direction of William Lawson (FY12-FY13), and Mary Carr and Jeremy Viscomi (FY14).

- *Financial/Contracts/Fiscal*: Director of Business Affairs/Director of Operations Kathy Chapman provides accounting, contract management and fiscal services for PTTC Management, the Board and coordinates RLO contractual/financial interactions. She also coordinates PTTC's annual audit process, which is required since PTTC receives federal funding. When the PTTC annual budget fell below \$500,000 in FY12 an annual audit was no longer required. As a service to the Board, Chapman also serves as Secretary of PTTC.

3.4 RLO Coordination

The resources available for RLO coordination changed dramatically during the contract period. At the beginning of the contract period when more financial resources were available, the National Project Manager (Cole) could devote a significant amount of time to RLO coordination. When staff was slimmed down to only a consultant Executive Director (Cole), little time remained for RLO coordination. Currently PTTC is led by the RLO's and coordination is done through the Executive Directors, Mary Carr and Jeremy Viscomi and Director of Operations Kathy Chapman.

Coordination issues during the contract period included regional restructuring, RLO and RLO Director changes; and adapting to a new regional business model with significantly lower RLO funding. PTTC went from 10 regions to 6 under AAPG to match with AAPG regions. Following the separation from AAPG, PTTC reduced the regions to five to more efficiently coordinate and organize workshops. Workshop scheduling is an ongoing coordination task. HQ also seeks to develop and coordinate "traveling" workshops. Traveling workshops are workshops that, because of broad interest in the topic, can be held in several regions. PTTC HY staff also organized and held workshops in regions that were underrepresented by RLO workshops. In the early years of the contract PTTC HQ conducted traveling workshops focused on the Stripper Well Consortium and RPSEA projects. Following PTTC's signing a Technology Transfer contract with RPSEA in late FY10 activities fell under that contract. For the convenience of both the instructors and the RLOs, HQ coordinates contracting. A partnership with Energy Forum in 2012 led to a series of MORE workshops that focused on NETL research project on Enhanced Oil Recovery.

Entering FY10, there were new RLO Directors in several organizations. Additional coaching time by Lance Cole was required to familiarize new staff with procedures, best practices and contractual/deliverable/reporting requirements; however two of the regions, Central and Eastern Gulf Coast never became effective RLO's and the regions were absorbed into the Midcontinent and Midwest regions. The five RLO regions in FY12 became the reduced Eastern Region, a new Midwest Region, the greatly expanded Midcontinent Region, the Rocky Mountain and West Coast Regions. RLO's plan and coordinate all workshop and activities in their region and promote cross-over workshops with other regions. RLO's continue to communicate with PTTC headquarters for promotion and registration of workshops and activities on PTTC's website and in the quarterly *Network News* and weekly e-Alerts.

In FY13 and FY14, under the RPEAS contract, PTTC coordinated with the RLO's to hold RPSEA funded workshops in PTTC regions developing a synergy with established PTTC local facilities and attendees and RPSEA research projects. This model has been very successful for both PTTC RLO's and RPSEA.

3.5 Fund Raising

From inception PTTC's intent has been to transition to a self-funded organization, but it has never been able to achieve that. Modest funding is received from advertising in the newsletter and the website. Some RLOs have also raised modest sponsorship funds to augment funding received from PTTC. A sponsorship program of was implemented during the five-year contract to assist in fund raising for specific events, such as the FY14 ASME program and workshops.

During FY10-FY14 PTTC focused on federal funding opportunities from its historical DOE source, other DOE programs including CCS and RPSEA, and other federal agencies. PTTC won a new five-year contract

with RPSEA beginning in FY10 to conduct technology transfer. PTTC negotiated a two-year contract extension of the RPSEA contract to run to the end of RPSEA's DOE contract, December 31, 2016. PTTC was also successful with other partners in receiving continuing DOE funding on the CCS training for the Permian Basin contract through FY13.

Figure 3 – National Communication Products

People are the Key to PTTC Success

20 Years ago this week, PTTC signed its first extended contract under the Department of Energy. This was finding that would set in motion the joining together of oil and gas representatives from around the country and from all segments of the industry, bringing to mind the 1917 song title, *Roll, Roll, The Gang's All Here*. This was a precedent setting merger of industry, academia, and federal and state government that would serve as a strong model for other industries.

PTTC signed its first subcontract in 1994 with BDM-Oklahoma, an organization that had been formed to work in Bartlesville, Oklahoma, managing the National Institute for Petroleum and Energy Research (NPER), a DOE project office. The Bartlesville office managed most of the technology transfer funding for PTTC and its three 10 Regional Lead Organizations, universities and geological surveys in 10 states.

The Washington, DC-based parent PTTC organization was proud and appreciative of its significant funding from DOE, eventually working directly under the DOE office of the National Energy Technology Laboratory, and housing several grants and contracts over time that allowed PTTC and its RLOs to share cost effective technological information with the over 6,000 independent producers of oil and gas in the U.S. In fact, in its 20 years of workshops, PTTC has held over 1,900 workshops and served over 90,000 attendees. With planning support from BPA and DC contractors, funding from DOE was heavily leveraged by the contribution of dedicated academic staff and industry supporters as well as direct state funding in several cases through the PTTC RLOs. Each RLO opened its doors to the public to allow information sharing, computer usage, and the making of valuable connections.

Executive Director Deborah Russell led the charge to form the impressive 29 plus member Board of Directors and worked with the Regional Lead Organizations (RLOs) to help them form regional Producer Advisory Groups, representing over 200 industry professionals around the country. If you have followed the past several newsletters cover articles reminding about PTTC's formative years, the common theme celebrates the people involved in PTTC, and technology transfer in general. In the case of PTTC, it has not only been a village that has been incorporated, but a national industry.

PTTC hit the ground running with that original 1994 DOE funding, visiting the universities around the country to negotiate subcontracts, and setting a schedule for a series of industrywide Problem Identification (PI) Workshops seeking a grassroots response to the needs of the domestic petroleum industry. In 2014, PTTC has relaxed its terms, holding two PI Workshops in Houston and Morgantown in collaboration with ERM HARC to determine needs and assist in the planning of next steps for the parties' PIST project – Flaring Issues, Solutions and Technologies. A third PI Workshop will be held in October in Denver (see calendar). Due to the PI Workshops, the team kicked off the project with a breakout meeting at UREC, which was held in Denver in August. PTTC is excited to be participating in this project, and plans to continue it into Phase II.

Due to changes in federal direction and reduced DOE funding in recent years, PTTC has begun to transition into an independent organization without substantial federal funding. Workshop numbers have reflected a decline in 2012 and 2013, and several regions become inactive. However, in 2014 the number of workshops to date is 63, an increase over the 2013 total of 54 workshops. Efforts are moving forward to expand into "abandoned regions" and hold more workshops and attract new audiences.

As PTTC reaches this 20 year anniversary, we continue to reflect on the amazing work produced, the relationships we have formed, and the benefits realized by industry. Gratitude is again extended to the U.S. Department of Energy and the hundreds of individuals who have contributed to fulfillment of the mission of PTTC. Read on for information on ERM, industry-wide updates, the calendar of events, and regional sections to find out what is going on in your part of the country.

Continued on page 2

Reorganized PTTC Continues Its Mission To Serve Independents

On Sept. 30, the Petroleum Technology Transfer Council and the National Energy Technology Laboratory contractually parted ways. This milestone represents the end of a 20-year plus relationship with the Department of Energy.

In that time, PTTC has greatly impacted the independent oil and gas industry across the country. In our first 10 years, we made more than 90,000 personal contacts through our regional and national offices. During that first 20 years, PTTC has presented more than 1,800 technology-related workshops totaling 11,000 instructions, produced for more than 90,000 industry professionals. Each workshop was designed and proved to be accessible to the virtually anyone, and locations spanned from the largest metropolitan areas to the farthest reaches of the oil patch.

Every workshop and PTTC initiative has been designed specifically to enhance production, improve environmental awareness, and save money. Over the years, we have been extremely successful.

PTTC also has developed strong relationships with multiple universities, geological surveys, and engineering trade organizations. Each of these connections has allowed PTTC to access some of the best and brightest the industry has to offer, and consequently, we have been able to provide more industry participants that same access through our workshops and outreach. Quality, cost effective workshops have been our hallmark, and these relationships have helped foster a rich learning environment aimed at the continued success of the U.S. oil and gas industry. Many of these relationships are still active and are a key component to fulfilling the PTTC mission.

In addition, the regional lead organizations have been a critical link in fulfilling PTTC's objectives. Years ago, these organizations were supported by DOE through PTTC. However, the five remaining regional lead districts believe so strongly in PTTC's mission and the impact it has within industry, that they have continued to support the PTTC mission for an split of new regional funding during the past several years.

So, what happens now? I am proud to say it is business as usual at PTTC.

The PTTC Board has agreed unanimously that continuing our mission and objectives is a key component to serving the overall needs of the oil and gas industry. In fact, PTTC is in the process of developing several initiatives designed to give our impact across the country. That said, we have revised our strategy and streamlined our executive team to accommodate these initiatives.

I am naming over my half of the PTTC executive director role to co-Director Mary Carr, who is the regional lead for the Rocky Mountain Region and executive director in charge of programs. Anyone who has attended a PTTC event in Colorado, Wyoming or Utah knows the quality of Mary's work.

In addition to my primary function at the University of Kansas Tertiary Oil Recovery Program, I will remain director for

“Continuing our mission and objectives is a key component to serving the overall needs of the oil and gas industry.”

PTTC's Mid-Continent Region and will continue to serve on the board. I plan to continue writing Tech Connections as I hope it continues to offer a unique look at the technology and best practices independent operators can use to impact the success of their businesses.

Working with Mary will be our Director of Operations Kathy Chapman. Kathy has been with PTTC since the beginning and her dedication to its mission is unparalleled. Kathy's experience in negotiating contracts, managing staff, and responsibilities for accounting will play a critical role in the coming years.

In the remaining regions, we have Jerry Anderson at the Conservation Committee of California Oil and Gas Producers, who will continue his role as regional lead director for the West Coast. In the Midwest, Joan Crockett will continue to serve PTTC from the Illinois State Geological Survey. Finally, we have Doug Panchak, who will continue to serve as the regional lead director for the Eastern Region from West Virginia University. Each of our five regional leads also will continue to serve as members of the board.

In the coming months, you will see information about several new PTTC workshops and initiatives as well as a call for support. Among the initiatives will be reviving our regional advisory boards, which in the past played a key role in developing timely industry topics as well as influencing the overall direction of the organization.

I encourage anyone who has ever benefited from a PTTC-organized event, workshop, website, newsletter, seminar or partnership to show his support. The easiest way to provide support is by simply attending a PTTC event. However, we always encourage higher levels of involvement. Feel free to contact me directly or your regional lead to learn more about how you can help PTTC continue to serve the independent oil and gas industry.™

JEREMY YSCOM is director of technology transfer for the University of Kansas Tertiary Oil Recovery Program and is Mid-Continent regional director for PTTC. He has more than a decade of experience in developing and organizing technical conferences and special events.

Reproduced for the Petroleum Technology Transfer Council from the December 2014 issue of *The American Oil & Gas Reporter*

PETROLEUM TECHNOLOGY TRANSFER COUNCIL

TECH ALERT

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PETROLEUM HISTORY | [his web](#) | [EVENTS: PTTC Industry](#) | [WORKSHOPS: PTTC RPESEA](#)

this week in PETROLEUM HISTORY

Visit the [ACOSTE website](#) to read about this week in petroleum history.

calendar EVENTS

Regional Training & Events

1/28-29 **HP, HPX and H-Deeepwater TAC Meetings** - Sugar Land & Houston, TX
1/27-29 **Rocky Mountain Basic Openhole Log Interpretation** - Oyster, CO

Industry Events

1/18-19 **Introduction Well Analysis Workshop** (Eatonville, CO) - Wichita Falls, TX
1/21-26 **Well Analysis, Well and Wellbore Seismic** (Eatonville, CO) - Wichita Falls, TX
1/27-28 **8th Annual Deepwater and Shelf Reservoirs Workshop** - Houston, TX
1/27-29 **2014 Annual Southern Product Simulation Course** - Houston, TX
1/27-29 **Marcelline-Ultra Midstream Conference & Exhibition** - Pittsburgh, PA
2/24-26 **Devolution Unconventionals, DUG Midcontinent** - Oklahoma City, OK

PTTC HIGHLIGHTS

Upcoming Workshops January 2015

Jan 27-29 **Basic Openhole Log Interpretation** will be hosted by the Rocky Mountain region in Golden, CO (coordinator: Dan Vetter, Lead: Gregory Cline, Co-Lead: The course will offer a hands-on approach to basic openhole log analysis with a focus on routine methods targeting lithology, porosity, and fluid saturation. No prior knowledge of logging is necessary. The three day workshop main topics will be:

- An overview of petrophysical well log data acquisition
- Description of core-log correlation, porosity, and resistivity logs
- Determination of lithology, porosity, and fluid saturation from logs
- Interpretation techniques using logs individually and in combination
- Interpretation exercises to reinforce the interpretation methods discussed

For information and to register: marycarr@pttc.org or <http://www.pttc.org/pttc/pttc-education/pttc-events/1734488413>

RPESEA HIGHLIGHTS

Upcoming Events

Ultra-Deepwater TAC Meetings

RPESEA's Ultra-Deepwater Technical Advisory Committee (TAC) meetings will be held January 20-22 at the Greater Fort Bend Economic Development Council in Sugar Land, TX and Houston, TX (Missouri). Registration is now open at the [RPESEA website](#).

1 **First Assignment** January 20, 10:00 AM - 12:15 PM
2 **Second Assignment** January 20, 12:15 PM - 2:30 PM
3 **Third Assignment** January 21, 10:00 AM - 12:15 PM
4 **Presentations and Interactions: Environmental, Safety and Regulatory** January 21, 7:30 AM - 9:00 AM
5 **Conference & Reception** January 21, 12:00 PM - 2:30 PM
6 **Midstream** January 22, 9:45 AM - 10:00 PM
7 **Downstream** January 22, 10:00 AM - 12:00 PM
8 **Closing Luncheon and Reception & System Engineering** January 22, 10:00 AM - 3:00 PM

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The PTTC is providing these links to items of interest on a periodic basis to you. We appreciate your feedback. Please forward this Alert to others whom you feel may be interested. Register to receive PTTC eAlerts in your inbox.

• Synergizing regional programs

• Moving technology across the U.S.

• Shortening the technology adoption cycle

4.0 IMPACT OF TECHNOLOGY TRANSFER

There are four approaches that PTTC employed to measure the impact of its technology transfer program: (1) ask the attendees themselves whether they applied technologies they learned about through PTTC, (2) gather individual success stories that provide anecdotal evidence of successful technology transfer, (3) quantitatively estimate PTTC's impact in areas where industry was known to be applying new technology, and (4) document qualitative factors that confirm industry assigns value to PTTC's program.

For several years, including the first couple years of this contract period, PTTC gathered feedback from attendees at regional workshops. A key question posed to them was: *Have you used technology you learned about through PTTC?* Of those who responded, roughly 40% said "Yes" with a similar 40% of those responding providing at least cryptic details of their technology application and production/financial results. Through the years PTTC was also able to capture many "success anecdotes" that were typically reported in annual reports. Qualitatively, supported with some quantitative examples, PTTC had established the effectiveness of its technology transfer effort.

Early in 2005, about 18 months into this contract period, PTTC made a major effort to quantitatively estimate impact in **just eleven areas** where independents were broadly applying technologies. Results of this analysis are included as **Appendix C**. PTTC impact factors were estimated for each area. Those impact factors were an estimate of the % of industry economic activity that was influenced by PTTC activity, considering timing and quantity of PTTC technology transfer activities, industry participation and direct industry feedback about what % of industry value could be attributed to PTTC. Impact factors ranged from five to 25%. Of 1,266 million barrels of oil equivalent reserves that were realized, 88 million barrels could be logically attributed to PTTC activity. Significant operating cost reductions also occurred. Productivity was improved and training requirements reduced. The service provider community also realized significant value.

Three qualitative factors confirm PTTC's value/impact to the domestic O&G producing industry. First, AAPG was willing to step in and rescue PTTC, believing it was of significant interest to its domestic membership and of potential value internationally. Second, through a period of turmoil and now with participant fees dramatically increased, industry participants "keep coming back" to workshop activities. Third, technology developers seek out PTTC for exposure for their developing technologies, and many industry organizations/groups seek out PTTC for promotion of their meetings or events.

ADDENDUM

Petroleum Technology Transfer Council

DOE Award No.: DE-FG26-03NT15394

FY10 Annual Progress
October 1, 2009 – September 30, 2010

Targeted Technology Transfer to US Independents

EXECUTIVE SUMMARY

The Petroleum Technology Transfer Council (PTTC) is a unique not-for-profit network that focuses on transferring Exploration and Production (E&P) technology to the domestic oil and natural gas producing industry. PTTC connects producers, technology providers and innovators, academia, research and development (R&D) consortiums and governments. Local affordable workshops delivered by Regional Lead Organizations (RLOs), which are typically a university or geological survey, are a primary tool. PTTC also maintains a website network, issues a national newsletter, provides a column in a major trade publication, and exhibits at major industry events. It also encourages industry to ask technology-related questions, striving to find relevant answers that will save questioners significant time.

Working since 1994, the PTTC network has a proven track record of providing industry with technology insights they can apply. Volunteers at the regional and national level provide key guidance regarding where to focus technical effort and help connect PTTC with industry. At historical funding levels, PTTC had been able to hold well more than 100 workshops per year, drawing 6,000+ attendees. As funding decreased in the early 2000s, the level of activity decreased and PTTC sought a merger with the American Association of Petroleum Geologists (AAPG), becoming an AAPG-managed organization at the start of FY08. FY10 represents the third fiscal year under AAPG. PTTC's Board functions independently, but certain actions are subject to review and confirmation from AAPG's Executive Committee. Chris Hall from California served as PTTC's Chair during FY10.

During FY10 PTTC conducted 79 workshops, which drew 2,863 attendees. This represents a 21% decrease in total attendance compared to FY09 despite a modest increase in the number of workshops.

• Central/Eastern Gulf	0	0	Univ. of Alabama, LSU Center for Energy Studies
• Eastern	12	795	WV University, W. Michigan Univ., Illinois Geol. Survey
• Midcontinent	13	519	Univ. of Kansas TORP, Tulsa University
• Rocky Mountain	21	664	Colorado School of Mines
• Texas/SE New Mexico	6	194	Bureau of Economic Geology, Univ. of Texas @ Austin
• West Coast	14	344	Conservation Committee of California O&G Producers
• Headquarters	13	347	Primarily workshops, but a few webinars

PTTC's national program led by Headquarters (HQ) provides five essential functions: communications/ technology transfer, outreach, organizational management, RLO coordination and fund raising. PTTC continued key services in the communications realm— distributing its *Network News* newsletter to nearly 17,400 individuals (YE FY10), a modest decrease from FY09. PTTC also sends e-alerts to about 9,000 individuals, authors a monthly *Tech Connections* column in *The American Oil & Gas Reporter*, and maintains an integrated national-regional website network with six Tech Centers. In the outreach realm, PTTC exhibited at major industry events (North American Prospect Expo (NAPE), Summer NAPE, and AAPG and SPE annual meetings) as well as several smaller events.

PTTC's Board provided organizational leadership, meeting eight times during FY10. The Board met five times during the April – August 2010 time period when cash flow issues were being addressed. Staff were provided to deliver services, contractual deliverables, and maintain appropriate contract/financial/ fiscal systems. The audit of FY09 records cited no deficiencies, although there were management issues noted that the Board and staff have addressed. HQ staff coordinated “DOE workshop approval issues,” FY11 planning and startup/contractual matters with the RLOs. PTTC increased its ad/sponsor opportunities and retained a marketing consultant for ad/sponsorship sales in mid-2010. PTTC initiated work early in FY10 on another DOE contract (CCS Regional Training for the Permian Basin with partners AAPG and the Applied Petroleum Technology Academy of Midland). PTTC won a solicitation to provide technology transfer services to the Research Partnership to Secure Energy for America that will begin early in FY11.

1.0 INTRODUCTION

The Petroleum Technology Transfer Council (PTTC) was established by domestic crude oil and natural gas producers, working in conjunction with the Independent Petroleum Association of America (IPAA), the U.S. Department of Energy (DOE) and selected universities, in 1994 as a national not-for-profit organization to transfer Exploration and Production (E&P) technology to the domestic upstream petroleum industry, in particular to small independent operators. PTTC connects producers, technology providers and innovators, academia and university/industry/government research and development (R&D) groups. Coordinated by national Headquarters (HQ) staff, PTTC focuses on delivering local affordable workshops, working through universities/geological surveys in regions that cover producing areas of the U.S. Complementing the workshop program, PTTC's HQ organization maintains a strong web presence, newsletter, and exhibit and communications program.

From inception PTTC has received federal funding through DOE's oil and natural gas program managed by the National Energy Technology Laboratory (NETL). Funding was strong during early years and PTTC was able to deliver well more than 100 workshops per year, drawing 6,000 or more attendees per year. But in FY07, PTTC faced the reality of no further federal funding. During FY07 PTTC negotiated with the American Association of Petroleum Geologists (AAPG) for PTTC to become a subsidiary organization of AAPG and for AAPG to manage PTTC, which would bring organizational and financial resources to bear to provide a longer-term future for PTTC. AAPG and PTTC proceeded forth even though federal funding, albeit at a much lower level, was ultimately obtained. The changeover to an AAPG-managed PTTC occurred at the very end of FY07, so PTTC has been AAPG-managed for three full fiscal years. PTTC has proven it can operate with a new business model. PTTC won a competitive solicitation to provide technology transfer services to DOE (starting a new contract at the start of FY09). In FY10 PTTC also won an award to provide technology transfer services to the Research Partnership to Secure Energy for America (RPSEA) that will begin during the first quarter of FY11. Work began on another DOE award, CCS Regional Training for the Permian Basin, during the first quarter of FY10. In that work, PTTC is partnering with AAPG and the Applied Petroleum Technology Academy in Midland, Texas. During summer 2010 PTTC broadened its list of ad/sponsorship opportunities and retained a marketing consultant for ad/sponsorship sales. By the beginning of FY11 sales results were beginning to be seen.

As shown in **Figure 1**, with less funding and turbulent times within PTTC and industry itself, workshop activity and overall attendance has decreased significantly from the peak years in the FY03 to FY06 time period. Potential contributing factors to the decrease during FY10 are (1) a slow state with Regional Lead Organizations (RLOs) with closeout of one contract and starting new contracts, (2) unanticipated issues with obtaining DOE approval of workshop topics, (3) topics shaped to obtain DOE approval not being as interesting to industry, (4) a glut of workshop opportunities now being available from multiple organizations, and (5) the industry downturn limiting travel and registration fees. Relative contribution of the aforementioned elements to the decrease in total attendance has not been quantified. The RLOs are universities, geological surveys or other organizations that deliver workshops locally in PTTC's six regions (**Figure 2**), which are coincidentally roughly aligned with AAPG's Sections for synergy. Despite a slower than anticipated start, the RLOs nearly met their activity goal of 70 workshops per year. This goal would have been met if a few workshops near the end of FY10 had not been canceled due to low pre-registration.

Section 2.0 provides further discussion of workshop activity. **Section 3.0** describes the national program.

Figure 1 - Historical Workshop Activity and Attendance from Inception

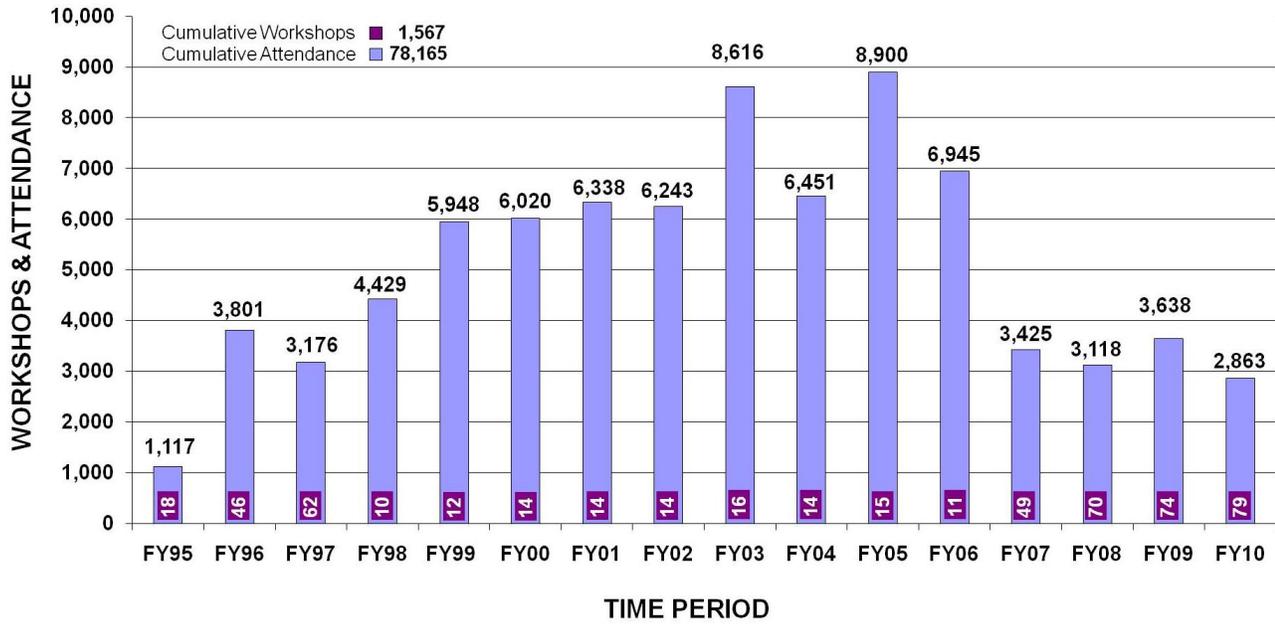
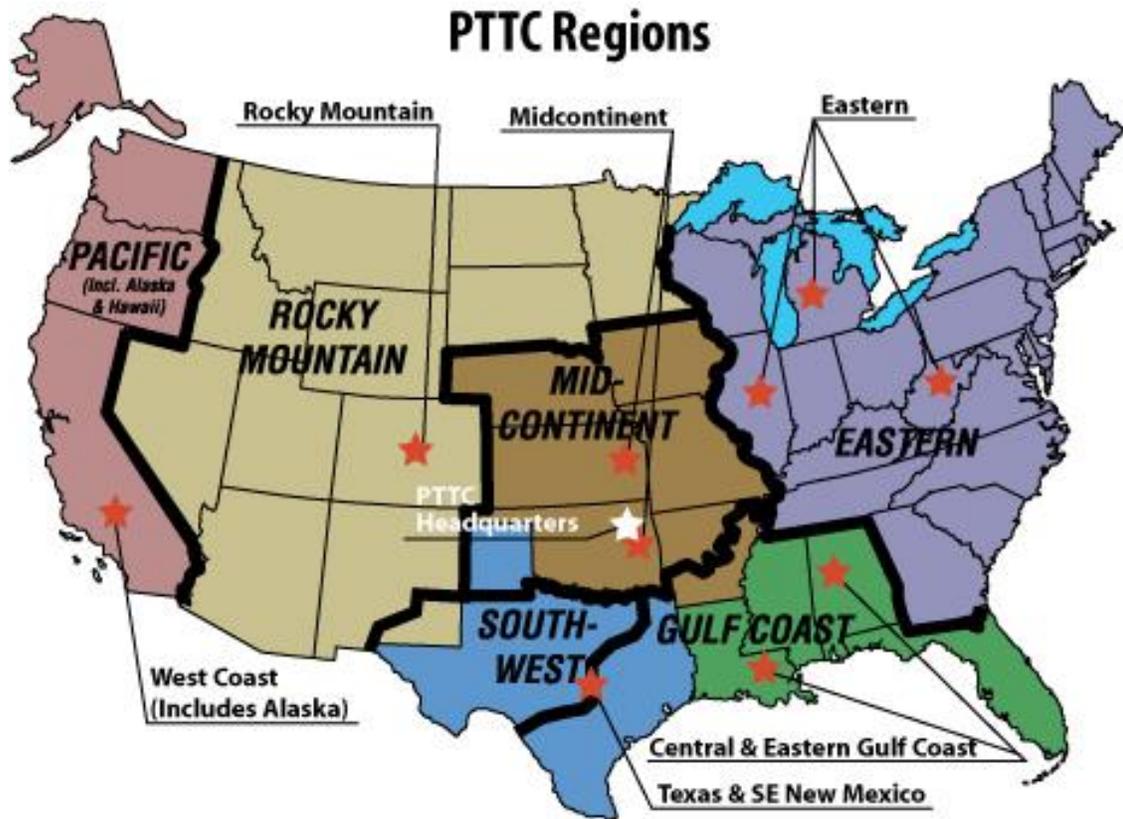


Figure 2 - PTTC Regional Map



2.0 WORKSHOP ACTIVITY

Table 1 summarizes workshop activity for FY10. Results by region by quarter are presented in **Appendix A**. Significant results include:

- 66 regional workshops drew 2,516 attendees (92 % of attendees from industry), averaging 38 individuals per workshop. Average attendance decreased 22% compared to FY09.
- The Eastern Region achieved the highest activity level and attendance among the regions. The three RLO organizations in this region (West Virginia University, Western Michigan University and the Illinois State Geological Survey) held 12 workshops that attracted 795 attendees.
- Attendance in both the Midcontinent and Rocky Mountain regions topped 600, approaching the level of the Eastern Region. The University of Tulsa was very effective in re-launching PTTC in Oklahoma, filling a gap that had existed since the Oklahoma Geological Survey resigned several years ago. Changeover to a new Regional Lead Organization (RLO) Director at the University of Kansas occurred without interruption to the PTTC program.
- The West Coast RLO was very active, holding 14 events that drew 344 attendees. Average attendance of 25 individuals per workshop was lower than the overall PTTC regional average.
- The Texas/SE New Mexico RLO planned to organize 12 workshops, but only six were actually held. The decreased activity level is primarily due to changes in RLO staff assigned to perform PTTC work.
- No RLO-organized workshops were held in the Central/Eastern Gulf Region due to new RLO Directors getting off to an extremely slow start. PTTC is addressing this issue, but at yearend FY10, there had not yet been an adequate resolution.
- Headquarters coordinated 13 activities, drawing 347 attendees for an average of 27 individuals per activity. Nine of the 13 activities were workshops, two were webinars, one was a special session in a conference and one was supporting an AAPG Geoscience Technology Workshop.

Table 2 represents the combined workshop calendar for FY10. Often, the RLOs cooperate with other groups (professional societies, trade organizations, etc.) in hosting workshops. These co-sponsored events can range from quite large to very small. Where events were cooperative, the co-sponsoring organization is indicated in Table 2. Events organized by Headquarters (and attendance reported under Headquarters) are noted in *italics* in Table 2.

Table 1 – FY10 Activity Summary

Region	Workshops			Comments
	No.	Att. (Avg.)	E&P (%)	
Central/ Eastern Gulf	0	0		Performance in this region was affected by RLO Director changes in both RLOs. Ibrahim Cemen at the University of Alabama is an academic chair, new to the University, so has many other time commitments. Louisiana State University did not appoint Omowumi Iledare as RLO Director until mid-year FY10. Activity in Louisiana, which was initiated by Headquarters, was affected by cancellations.
Eastern	12	795 (66)	628 (79%)	Combined, the RLOs delivered the 12 workshops planned for FY10 (six in the Appalachian Basin, three in the Illinois Basin, 3 in Michigan). Not unexpectedly, shale-oriented events drew strong attendance. Michigan’s spring “Field Experiences” workshop drew 185 attendees.
Midcontinent	13	519 (40)	496 (96%)	Combined, the two RLOs exceeded the planned 12 workshops. Strong attendance was experienced for engineering-oriented topics developed by the new RLO, the University of Tulsa. Kansas’s RLO Director changed in FY10 without interruption to the PTTC program.
Rocky Mountain	21	664 (32)	643 (97%)	FY10 workshop activity exceeded initial plan commitments. About 90% of workshops are conducted in Colorado with only occasional workshops in Wyoming, Montana, Utah and North Dakota.
Texas & SE New Mexico	6	194 (32)	154 (79%)	The RLO committed to conducting 12 workshops during FY10. Activity fell far below plans when several workshops were canceled, including HQ-organized workshops, due to low registration. Early in FY10 activity was adversely affected by changes in RLO staff.
West Coast	14	344 (38)	279 (81%)	Activity level exceeded plans. Major success for the year was conducting nine workshops in conjunction with the annual SPE/AAPG Western Regional meeting in Anaheim, California.
All Regions	66	2,516 (38)	2,200 (87%)	Activity level fell just short of the milestone goal of 70 workshops per year. The goal would have been met if several planned workshops near yearend had not been canceled when preregistration was too low.
Head-quarters	13	347 (27)	335 (97%)	Nine of the 13 activities were workshops, two were webinars, one was a special session in a conference and one was supporting an AAPG Geoscience Technology Workshop. Here too activity level was adversely affected by cancellations.
Total PTTC	79	8,863	2,535 (89%)	

Table 2 - PTTC FY10 Combined Calendar
(HQ events in italics)

Note: Where the RLOs worked cooperatively with other groups (professional societies, trade organizations, etc.), the co-sponsors are shown in parenthesis following workshop titles.		Total Attend.
October 2009		
10/20	West Coast workshop: Property Taxes – Long Beach, CA.	10
10/21	West Coast workshop: Property Taxes – Bakersfield, CA.	18
10/27	Rocky Mountain workshop: Chemical Enhanced Oil Recovery – Golden, CO.	13
10/27	Midcontinent workshop: Fundamentals of Waterflood Design – Wichita, KS.	56
10/28	Midcontinent workshop: Waterflood Systems and Operations – Wichita, KS.	53
November 2009		
11/5	Eastern workshop: Computer Mapping for Petroleum Exploration (Michigan Oil & Gas Association) – Mt. Pleasant, MI.	58
11/10	Texas/SE New Mexico core workshop: Sequence Stratigraphy, Depositional Systems, and Production Trends in the Atoka Series and Mid-Pennsylvanian Cleveland and Marmaton Formations, Western Anadarko Basin (Ellison Miles Geotechnology Institute, Texas Bureau of Economic Geology) – Farmers Branch, TX.	61
11/10	Rocky Mountain workshop: PETRA, Intermediate Mapping – Golden, CO.	20
11/12	Rocky Mountain workshop: GeoGraphix Training, Overview/Refresher – Golden, CO.	13
December 2009		
12/2	Texas/SE New Mexico workshop: Applied Reservoir Geology for Engineers – Houston, TX.	15
12/2	Midcontinent Short Course: Petroleum Geology of Kansas, Fundamentals of Petroleum Geology (Kansas Geological Society) – Wichita, KS.	77
12/3	Rocky Mountain core workshop: Unconventional Reservoirs (Triple O Slabbing) – Golden, CO.	48
12/3	Midcontinent Short Course: Petroleum Geology of Kansas, Kansas Producing Formations and Plays (Kansas Geological Society) – Wichita, KS.	72
12/8	Eastern workshop: Applied Petroleum Geology and Geochemistry for Thermogenic Shale-Gas Evaluation – A Primer Focused on Marcellus Exploration and Development in the Appalachian Basin (Pittsburgh Association of Petroleum Geologists, Pittsburgh Geological Society) – Pittsburgh, PA.	108
January 2010		
1/14-15	Rocky Mountain workshop: Fluvial Stratigraphy – Golden, CO.	34
1/20-21	Rocky Mountain workshop: Applied Hydrodynamics in Petroleum Exploration & Production – Golden, CO.	33
February 2010		
2/4-5	Midcontinent workshop: Completion and Stimulation(s) of Horizontal Wells Tight and Unconventional Gas Reservoirs – Tulsa, OK.	40
2/11	Rocky Mountain workshop: Economics of Oil and Gas – Golden, CO.	37
2/11	<i>Webinar: Predicting Gas Hydrates Using Pre-Stack Seismic Data in Deepwater GOM (AAPG)</i>	25
2/18-19	Midcontinent workshop: Completion and Stimulation(s) of Horizontal Wells Tight and Unconventional Gas Reservoirs – Tulsa, OK. REPEAT	40
March 2010		
3/1	Rocky Mountain workshop: Petra Basics – Golden, CO.	20
3/3	Eastern workshop: Chemical Enhanced Oil Recovery – Evansville, IN.	93
3/9-11	Rocky Mountain workshop: How to Find Bypassed Pay in Old Wells Using DST Data – Denver, CO.	20
3/16-17	<i>Geoscience Technology Workshop: Deepwater and Ultra Deepwater Reservoirs in the Gulf of Mexico (AAPG, Houston Geological Society) – Houston, TX.</i>	35
3/25	Eastern workshop: Michigan Basin Insights & Field Experiences – Mt. Pleasant, MI.	185

3/25	Midcontinent workshop: Pumpers Workshop – Pratt, KS.	54
April 2010		
4/2	Rocky Mountain workshop: Carbonate Diagenesis, Dolomitization and Porosity Evolution – Billings, MT.	25
4/5-9	Rocky Mountain workshop: Complex Well, Core Competency 2010 – Golden, CO.	15
4/15	Midcontinent workshop: Shale Gas Evaluation – Tulsa, OK.	16
4/17	Eastern workshop: Field Trip/Reservoir Characterization Workshop, Hicks Dome (New Albany Shale) – Southern Illinois.	27
4/19	Rocky Mountain workshop: GeoGraphix Training, Overview & Refresher Course – Golden, CO.	10
4/30 5/2	Eastern workshop: Marcellus and Utica Shale Core Workshop & Field Trip (Pittsburgh Association of Petroleum Geologists) – Central New York.	55
May 2010		
5/3	Texas/SE New Mexico workshop: Practical Salt Tectonics – Tyler, TX.	
5/4	Texas/SE New Mexico workshop: What's Your Bottom Line? Assessing Operating Costs (Midland College PPDC) – Midland, TX.	12
5/5	Midcontinent workshop: CBM Produced Water Treatment, Management and Beneficial Use – Oklahoma City, OK.	5
5/5	Midcontinent workshop: Reducing Power Costs in Oil & Gas Field Operations (SPE Wichita section) – Wichita, KS.	25
5/11-12	Eastern workshop: Completion and Stimulation(s) of Horizontal Wells in Tight and Unconventional Gas Reservoirs – Morgantown, WV.	36
5/25-26	West Coast workshops: Series of workshops preceding AAPG Pacific and SPE Western joint annual meeting (SPE Los Angeles Basin section) – Anaheim, CA. <ul style="list-style-type: none"> • Economics & Financial Aspects of Petroleum Property Evaluation, Richard Miller, Miller & Associates • Streamline Simulation for Reservoir Surveillance and Flood Management, Marco Thiele, Streamsim Technologies • Oil & Gas Permitting, CEQA and Environmental Issues; Sam Sarem, Improved Recovery Consultants; Grace Brandt, California Division of Oil and Gas; Pete Jonker, Environ Corp. • Thermal Recovery, Anthony Kovscek, Stanford University • Intro to Open Hole Logging, Janice Gillespie, CSU Bakersfield • Drilling Engineering 101, Val Lerma, Orchard Petroleum • Intro to Petroleum Engineering, Mason Medizade, Cal Poly • Petroleum Geology for the Non-Geologist, Janice Gillespie, CSU Bakersfield • Facility Engineering Design, Lisa Denke, DCKK Engineering 	25 21 21 10 30 35 30 42 33
5/27	Rocky Mountain workshop: Log Analysis with JLog Petrophysical Software – Golden, CO.	9
June 2010		
6/2	Texas/SE New Mexico workshop: Program for Induced Earthquake Research – Houston, TX.	33
6/7-9	Midcontinent workshop: Exploring for Bypassed Pay Using DST Data (AAPG Short Course) – Wichita, KS.	22
6/8	Eastern workshop: Old-Style Elog Analysis and Analysis of Black (New Albany) Shale Logs, Grayville, IL.	68
6/11-13	Eastern workshop: Marcellus Shale Core Workshop & Field Trip to Eastern W. Virginia's Valley & Ridge.	25
6/13	Rocky Mountain workshop: Source Rocks 101, What the Exploration Geologist, Geophysicist and Production Engineer Should Know About Source Rocks (RMS-AAPG) – Durango, CO.	21
6/14-18	Rocky Mountain: Futures in Energy 2010 – Pinedale, WY.	10
6/22	PTTC/Stripper Well Consortium field trip: A Field Excursion for Stripper Well Technologies in Western New York	18

6/29	Rocky Mountain workshop: Petra Basics -- Golden, CO.	20
6/30	Rocky Mountain workshop: Petra Intermediate Mapping -- Golden, CO.	20
July 2010		
7/6	Rocky Mountain workshop: Risk and Uncertainty Analysis for Unconventional Resource Plays (Energy Epicenter RMAG/COGA) – Denver, CO.	12
7/8-9	Midcontinent workshop: Reserves Estimation in Unconventional Reservoirs – Tulsa, OK.	30
7/10	Rocky Mountain field trip: Niobrara Formation Field trip, Northern Colorado Front Range: An Outcrop Analog for Shale Gas Resource Plays Throughout the U.S. (Energy Epicenter RMAG/COGA) – Denver, CO.	34
7/23-24	Texas/SE New Mexico workshop: MADAGASCAR (open-source geophysical data analysis software) – Houston, TX.	46
7/27	West Coast workshop: Water Shut-off and Conformance Control– Long Beach, CA.	19
7/28	West Coast workshop: Water Shut-off and Conformance Control – Bakersfield, CA.	29
August 2010		
8/3	<i>HQ workshop: Mining Online Technology Information (Getting Better Answers, Faster) – Dallas, TX.</i>	8
8/10	<i>HQ webinar: Environmental Mitigation and Lifecycle Water Management Associated with Shale Gas Development (Bill Hochheiser, ALL Consulting)</i>	2
8/13	<i>HQ workshop: Mining Online Technology Information (Getting Better Answers, Faster) – Golden, CO.</i>	11
8/23	<i>HQ workshop: Technologies Targeting Mature Properties, RPSEA Small Producers, SWC – Shreveport, LA.</i>	7
8/24	Eastern workshop: Benefits of the Environmentally Friendly Drilling Program for Marcellus Shale Producers – Morgantown, WV.	87
8/25	<i>HQ workshop: Technologies Targeting Mature Properties, RPSEA Small Producers, SWC – Tulsa, OK.</i>	6
8/26	<i>HQ workshop: Technologies Targeting Mature Properties, RPSEA Small Producers, SWC – Wichita, KS.</i>	14
8/26	<i>HQ workshop: IOR Field Applications and Case Histories – Jackson, MS.</i>	9
8/30 9/2	<i>HQ Workshop: Session @ Integrated Petroleum Environmental Conference focused on DOE Environmental/Water Projects – San Antonio, TX.</i>	70
September 2010		
9/7-8	Midcontinent workshop: Petroleum Technology Fair – Great Bend, KS.	30
9/8	<i>HQ workshop: IOR Field Applications and Case Histories – Denver, CO.</i>	13
9/24	Rocky Mountain workshop: Bakken Petroleum System (Steve Sonnenberg & Rick Sarg, Colorado School of Mines) – Golden, CO.	37
9/25	Eastern workshop: Trenton-Black River hands-on core workshop at Western Michigan University, Kalamazoo, MI.	35
9/27	<i>HQ workshop: Water Issues (and Solutions) Associated with Hydraulic Fracturing (Ground Water Protection Council) – preceding Ground Water Protection Council Symposia – Pittsburgh, PA.</i>	140
9/28-29	Rocky Mountain workshop: Completion & Stimulation(s) of Horizontal Wells in tight and Unconventional Gas Reservoirs – Denver, CO.	40
9/29	<i>HQ workshop: IOR Field Applications and Case Histories – Bakersfield, CA.</i>	7
9/30	Rocky Mountain Symposium: Overcoming Geologic Challenges with Advanced Drilling and Completions Techniques (RMAG) – Denver, CO.	183
9/30	West Coast workshop: Drilling Engineering 101 (Val Lerma, Orchard Petroleum) – Sacramento, CA.	21

Petroleum Technology Transfer Council

DOE Award No.: DE-FE-0001175

FY11 Technical Progress
October 1, 2010 – September 30, 2011

Targeted Technology Transfer to US Independents

EXECUTIVE SUMMARY

The Petroleum Technology Transfer Council (PTTC) is a unique not-for-profit network that focuses on transferring Exploration and Production (E&P) technology to the domestic oil and natural gas producing industry. PTTC connects producers, technology providers and innovators, academia, research and development (R&D) consortiums and governments. Local affordable workshops delivered by Regional Lead Organizations (RLOs), which are typically a university or geological survey, are a primary tool. PTTC also maintains a website network, issues a national newsletter, provides a column in a major trade publication, and exhibits at major industry events. It also encourages industry to ask technology-related questions, striving to find relevant answers that will save questioners significant time.

Working since late 1993, the PTTC network has a proven track record of providing industry with technology insights they can apply. Volunteers at the regional and national level provide key guidance regarding where to focus technical effort and help connect PTTC with industry. At historical funding levels, PTTC had been able to hold well more than 100 workshops per year, drawing 6,000+ attendees. As funding decreased in the early 2000s, the level of activity decreased and PTTC sought a merger with the American Association of Petroleum Geologists (AAPG), becoming an AAPG-managed organization at the start of FY08. This relationship with AAPG was terminated by mutual consent in May 2011 and PTTC once again operates independently. Chris Hall, California continues to serve as Chairman of the Board of Directors.

During FY11 PTTC conducted 79 workshops, 61 within the regions and 18 associated with national. Total attendance of 3,850 represents a 34% increase over FY10. Attendance averaged 49 individuals per event. Even removing the AAPG events considered cooperative (see below note), attendance totaled 3,270, a 15% increase over FY10.

• Central/Eastern Gulf	1	24	Univ. of Alabama, LSU Center for Energy Studies
• Eastern	9	900	WV University, W. Michigan Univ., Illinois Geol. Survey
• Midcontinent	10	531	Univ. of Kansas TORP, Tulsa University
• Rocky Mountain	24	994	Colorado School of Mines
• Texas/SE New Mexico	4	140	Bureau of Economic Geology, Univ. of Texas @ Austin
• West Coast	13	421	Conservation Committee of California O&G Producers
• National	18	840	

(Note: 580 national attendees are associated with AAPG e-symposia/workshops that PTTC promotes. PTTC's eight events drew 260 attendees.)

PTTC's national program led by Headquarters (HQ) provides five essential functions: communications/technology transfer, outreach, organizational management, RLO coordination and fund raising. PTTC continued key services in the communications realm— mailing its September 2011 issue of *Network News* to 14,650 individuals (a 16% decrease compared to FY10 due to removing bad addresses) and distributing it via e-alert to 10,033 (an approximate 10% increase since YE FY10). PTTC sends weekly e-alerts of different formats to more than 10,000 individuals, authors a monthly *Tech Connections* column in *The American Oil & Gas Reporter* and maintains an integrated national-regional website network with six Tech Centers. In the outreach realm, PTTC exhibited at major industry events (North American Prospect Expo (NAPE), Summer NAPE, and AAPG annual meeting) as well as several smaller events.

PTTC's Board met frequently during FY11 addressing three major issues – separation from AAPG, bringing strategic leadership by retaining Bill Lawson aboard on a part-time basis as Executive Director and adjusting plans/budgets to the funding shortfall. Changes also occurred in responsibilities of consultants serving HQ. The required FY10 audit cited no major deficiencies. Additional contracts for Permian Carbon Capture Utilization and Storage (CCUS) training and providing tech transfer services to the Research Partnership to Secure Energy for America (RPSEA) provided work that enabled HQ to retain services of regular consultants. Revenue from ad sales continues to build.

1.0 INTRODUCTION

The Petroleum Technology Transfer Council (PTTC) was established by domestic crude oil and natural gas producers, working in conjunction with the Independent Petroleum Association of America (IPAA), the U.S. Department of Energy (DOE) and selected universities, in 1994 as a national not-for-profit organization to transfer Exploration and Production (E&P) technology to the domestic upstream petroleum industry, in particular to small independent operators. PTTC connects producers, technology providers and innovators, academia and university/industry/government research and development (R&D) groups. Coordinated by national Headquarters (HQ) staff, PTTC focuses on delivering local affordable workshops, working through universities/geological surveys in regions that cover producing areas of the U.S. Complementing the workshop program, PTTC's HQ organization maintains a strong web presence, newsletter, and exhibit and communications program.

From inception PTTC has received federal funding through DOE's oil and natural gas program managed by the National Energy Technology Laboratory (NETL). Funding was strong during early years and PTTC was able to deliver well more than 100 workshops per year, drawing 6,000 or more attendees per year. But in FY07, PTTC faced the reality of no further federal funding. PTTC sought a merger with the American Association of Petroleum Geologists (AAPG), becoming a subsidiary of AAPG and an AAPG-managed organization beginning with FY08. This relationship with AAPG was terminated by mutual consent in May 2011 as both organizations realized benefits were not being realized from the relationship. Performance during recent history has proved that PTTC is adaptable – although not necessarily thriving, PTTC is proving it can survive with different business models at both the national and regional levels. Nationally, other tech transfer-related contracts are contributing to HQ survivability. The willingness of several of the Regional Lead Organizations (RLOs) to continue delivering workshops with no or minimal financial support from PTTC demonstrates their ability to survive under a new business model. Not all RLOs are in a position to deliver services under this business model. Advertising sales begun in 2010 continue to build. HQ is evaluating other multiple opportunities for revenue-generating services.

As shown in **Figure 1**, peak activity and attendance occurred in the FY03 to FY06 time frame when federal funding was significantly higher than in FY11. Despite a plethora of organizational and funding changes in recent years, PTTC has demonstrated its ability to draw 3,000 to 4,000 individuals per year. These results combined with a strong national communications program demonstrate a still viable PTTC to O&G producers, its primary customer.

The RLOs are universities, geological surveys or other organizations that deliver workshops locally in PTTC's six regions (**Figure 2**), which after PTTC became independent again still remain roughly aligned with AAPG's Sections.

Section 2.0 provides further discussion of workshop activity. **Section 3.0** describes the national program.

Figure 1 - Historical Workshop Activity and Attendance from Inception

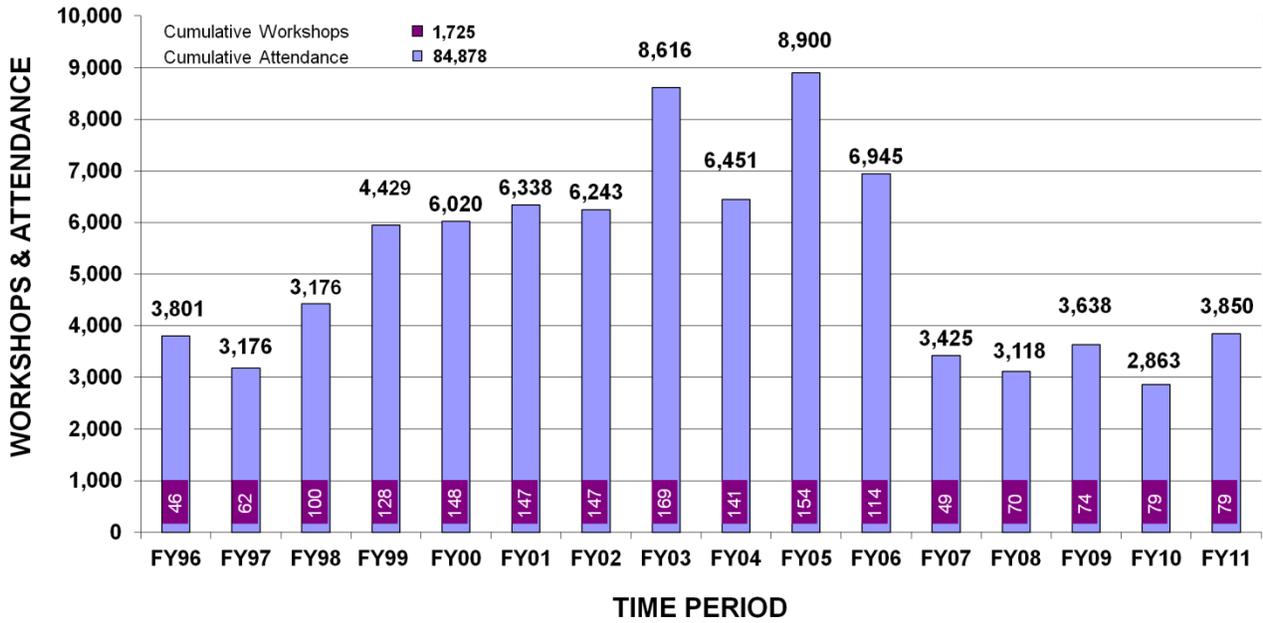
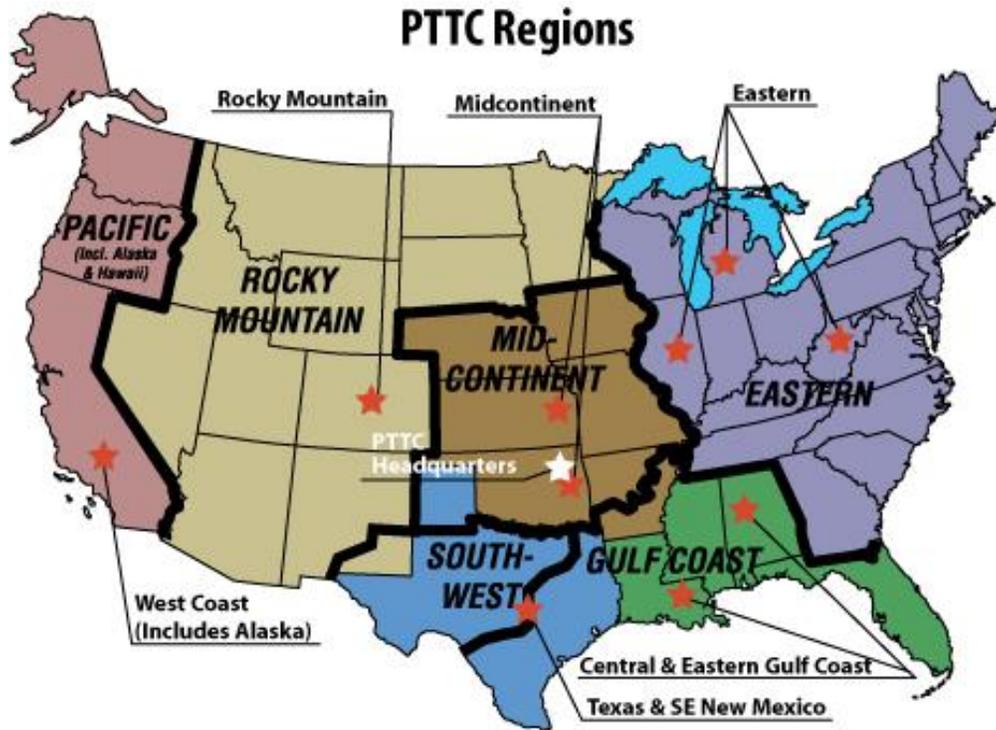


Figure 2 - PTTC Regional Map



2.0 WORKSHOP ACTIVITY

Table 1 summarizes workshop activity for FY11. Results by region by quarter are presented in **Appendix A**. Significant results include:

- 61 regional workshops drew 3,010 attendees (87 % of attendees from industry), averaging 49 individuals per workshop. Average attendance increased 29% compared to FY10.
- The Eastern Region, which conducted nine events, exhibited the strongest average attendance of 100 individuals per workshop. Strong results were experienced in all three basins (Appalachian, Illinois and Michigan basins). Strong average attendance reflects high industry interest and good topic selection by the three RLOs (West Virginia University, Western Michigan University and the Illinois State Geological Survey).
- Highest regional attendance of 994 occurred in the Rocky Mountain Region. Attendance at the 24 workshops averaged 41 individuals per workshop. Attendance of 374 at an RMAG/PTTC forum on the “Bakken- Three Forks Petroleum System” did skew averages upward. Attendance is commonly in the 15 to 40 range.
- Two regions, Midcontinent and West Coast, exhibited good attendance. Ten workshops in the Midcontinent drew 531 attendees, while 421 individuals participated in 13 workshops in the West Coast Region. In the Midcontinent Region, KU TORP’s program remained active throughout FY11. Activity in the University of Tulsa’s program during the last half of FY11 was reduced when funding reductions occurred. CCOGP’s program in the West Coast was focused early in FY11. All planned activities were either conducted or committed to by April 2011 so later funding reductions did not impact FY11 activity.
- The Texas/SE New Mexico RLO conducted only four workshops, a much lower activity level than originally planned. Activity level was negatively impacted by scheduling delays, and for those workshops experiencing scheduling delays, funding reductions.
- Programs in the Central/Eastern Gulf Region, both by the University of Alabama and LSU’s Center for Energy Studies, are basically inactive. PTTC continues to address commitment of the participating RLOs, particularly with reduced RLO funding being the norm going forward.
- Headquarters-associated activities include webinars, cooperative workshops and, while part of AAPG, cooperation in their e-symposia and relevant Geoscience Technology Workshops (GTWs). Although 18 events and 840 attendees are reported for Headquarters, 580 of those attendees are associated with AAPG e-symposia/GTWs. In reality, PTTC conducted three webinars that drew 62 people, and conducted five workshops that drew 198 people. HQ-associated activity was curtailed for the last half of FY11.

Table 2 represents the combined workshop calendar for FY11. Often, the RLOs cooperate with other groups (professional societies, trade organizations, etc.) in hosting workshops. These co-sponsored events can range from quite large to very small. Where events were cooperative, the co-sponsoring organization is indicated in Table 2. Events organized by Headquarters (and attendance reported under Headquarters) are noted in “*italics*” in Table 2. Events where PTTC exhibited are also shown in Table 2. For information purposes only (not metrics for this contract), PTTC also listed events associated with its Permian CCUS regional training contract with DOE.

Table 1 – FY11 Activity Summary

Region	Workshops			Comments
	No.	Attend.	From E&P (%)	
Central/Eastern Gulf Coast	1	24	19 (79%)	Programs by the two RLOs, University of Alabama and LSU Center for Energy Studies, were basically inactive during FY11 with only one workshop by Alabama being held. PTTC is working with the RLOs to determine their interest in participating with PTTC.
Eastern	9	900	684 (76%)	Six of the nine workshops held during FY11 occurred in the Appalachian Basin. Major events were also held in the Illinois and Michigan basins. Average attendance during FY11 of 100 reflects strong industry demand and effective program planning. Details concerning FY12 plans are still emerging.
Midcontinent	10	531	528 (99%)	During FY11 eight workshops were held in Kansas and two in Oklahoma. Oklahoma's program during the last half of FY11 was impacted by reduced funding. Oklahoma workshops are cooperative with SPE's Midcontinent Section. Most recently, Kansas has focused on offering two-day workshops where attendees can attend either or both days, and a choice to participate remotely through "live" Internet broadcast is offered.
Rocky Mountain	24	994	974 (98%)	Mary Carr at the CSM delivered 24 activities during FY11 with 20 (83%) of those being held in Colorado. Most Colorado workshops are held at CSM to control costs. Workshops were also held in Montana, Utah and Wyoming. An active program is planned for FY12.
Texas & SE New Mexico	4	140	129 (92%)	Four workshops were held during FY11, each topic in a different city in Texas. Reduced RLO funding past April 2011 reduced activity during the last half of FY11. RLO plans for FY12 with reduced funding are undefined.
West Coast	13	421	287 (68%)	The FY11 program consisted of seven workshops in California (four topics) and six in Alaska with SPE Western Region's annual meeting. The cooperative effort with SPE's Western Region works well for all. An active FY12 program is planned.
All Regions	61	3,010	2,611 (87%)	
Headquarters Total	18	840	667 (79%)	
Total FY11	79	3,850	3,278 (85%)	

Table 2 - PTTC FY11 Combined Calendar
(HQ-related event *Permian CCUS Center*)

Note: Where the RLOs worked cooperatively with other groups (professional societies, trade organizations, etc.), the co-sponsors are shown in parenthesis following workshop titles.		Total Attend.
October 2010		
10/5	Midcontinent workshop: Innovations in Well Logging – Wichita, KS	50
10/6	Midcontinent workshop: The Process and Evaluation of Drill Stem Testing – Wichita, KS	48
10/6	Eastern workshop: Zero Discharge Water Management for Marcellus Shale Gas Play Development – Morgantown, WV	47
10/7	<i>Exhibit @ Oklahoma Marginal Well Commission Trade Fair, Oklahoma City, OK</i>	----
10/12-13	Rocky Mountain workshop: Low Resistivity, Low Contrast Pays – Golden, CO	21
10/21	<i>AAPG/PTTC e-Symposia: Evaluating Mature Fields (Don Clarke, consultant)</i>	30
10/21	Rocky Mountain workshop: PETRA Basics – Golden, CO	15
10/21	West Coast: 2010 O&G Conference (CCCOGP) – Bakersfield, CA	135
November 2010		
11/8-9	<i>AAPG GTW: New Ways to Look at Old Data</i>	62
11/11 10 am CST	<i>AAPG/PTTC E-symposia: Geochemical Evaluation of Eagle Ford Group Source Rocks and Oils from the First Shot Field, Texas (Janell Edman, Consultant; Janet Pitman, USGS)</i>	64
11/11	Rocky Mountain workshop: Exploration Risk Reduction Through Basin Modeling 1-2-3 – Golden, CO	14
11/15	<i>Permian CCUS Center: Lunch & Learn @ IOGCC Annual Meeting – Tucson, AZ</i>	----
11/17	Eastern workshop: Resource Assessment of the Marcellus Shale Gas Play – Morgantown, WV	102
11/18	Rocky Mountain workshop: Petrophysical Characterization of the Madison Group for Carbon Sequestration Modeling: An Example From Southwestern Wyoming (Geoffrey Thine and Mark Tomasso, Enhanced Oil Recovery Institute, Univ. of Wyoming) – Golden, CO	10
11/18 2 pm CST	<i>AAPG/PTTC E-symposia: Low Temperature Geothermal Resources, A DOE Webinar (Tim Reinhardt, US DOE)</i>	119
11/19	Rocky Mountain workshop: Moving CCS from Research to Commercial Deployment: Pending Regulations, Public Perceptions and Public Outreach (James Myers, Wyoming CCS Technology Institute, Univ. of Wyoming) – Golden, CO	6
11/30/10	West Coast workshop: Drilling Engineering 101 – Ventura, CA	70
December 2010		
12/1-2	Midcontinent workshop: Completion and Stimulation(s) of Horizontal Wells in Tight and Unconventional Gas Reservoirs – Tulsa, OK	13
12/6-10	<i>Permian CCUS: Exhibit @ CO2 Conference Week, Houston & Midland, TX</i>	----
12/7	<i>Exhibit @ OIPA Midcontinent CBM & Shale Gas Conference, Tulsa, OK</i>	----
12/9 10 am CST	<i>AAPG/PTTC E-symposia: The Bakken Petroleum System in the Williston Basin (Stephen Sonnenberg, Colorado School of Mines)</i>	61
12/9-10	Midcontinent workshop: Reserves Estimation in Unconventional Reservoirs – Tulsa, OK	29
12/14 10 am CST	<i>AAPG/PTTC E-symposia: Shale Gas in Quebec's Sedimentary Basins (Jean-Sebastien Marcil, Junex Inc.)</i>	22
12/16	Rocky Mountain workshop: GeoGraphix Training: An Overview and Refresher Course – Golden, CO	20

12/16 10 am CST	<i>PTTC FREE WebEx meeting: The Promise and Performance of Next Generation CO₂ EOR (Vello Kuuskraa and Michael Godec, Advanced Resources International)</i>	22
January 2011		
1/11	Central/Eastern Gulf workshop: The Role of Carbon Capture and Storage in Rejuvenating the Energy Portfolio of the Southeastern United States (Jack Pashin, Alabama Geological Survey) – Jackson, MS	24
1/18-19	<i>AAPG/PTTC Geoscience Technology Workshop: Deepwater and Ultra Deepwater Reservoirs in the Gulf of Mexico – Houston, TX</i>	103
1/19	Rocky Mountain workshop: Completions and Stimulation for Geologists (Jennifer Miskimins, CSM) – Golden, CO	41
1/19	West Coast workshop: Cementing – Sacramento, CA	11
1/20	<i>PTTC HQ: Exploring Alaska's Geology and Regulatory Landscape (DOE during Meet Alaska Conference) – Anchorage, AK</i>	27
1/20	Texas/SE New Mexico workshop: Stimulations and Completions for Geologists (Jennifer Miskimins, CSM) – Farmers Branch, TX	29
1/24	<i>HQ workshop: Hydraulic Fracturing workshop@ GWPC UIC Conference – Austin, TX</i>	75
1/25 2 pm CST	<i>AAPG/PTTC E-symposia: Integrating Disciplines, Data and Workflows in Resource Plays; Surface Seismic to Stimulation (David Close, Apache Corporation)</i>	43
1/26	Eastern workshop: New Albany Shale: Lessons Learned in the Recently-completed RPSEA-GTI Research on the New Albany Shale Gas Project in Indiana and Kentucky – Evansville, IN	83
1/26	West Coast workshop: Cementing – Bakersfield, CA	42
1/27	West Coast workshop: Cementing – Long Beach, CA	26
February 2011		
2/7-9	<i>PTTC-developed Session featuring DOE-supported Alaskan projects @ Arctic Technology Conference, Houston, TX</i>	50
2/8-9	Rocky Mountain workshop: Basic Well Log Interpretation (Dan Krygowski, The Discovery Group) – Golden, CO	51
2/10 10 am CST	<i>PTTC FREE WebEx meeting: EPA-Required New GHG Reporting Rule; Requirements and Practical Implementation for Small and Independent Operators (IOGCC)</i>	28
2/17	<i>AAPG/PTTC e-symposia: Siliclastic Sequence Stratigraphy: Application to Exploration and Production (Janok Bhattacharya, University of Houston)</i>	27
2/17-18	<i>Exhibit @ Winter NAPE – Houston, TX</i>	----
2/24 10 am CST	<i>PTTC FREE WebEx meeting: SPI Gels for the Oil & Gas Industry (Ken Oglesby, Impact Technologies LLC)</i>	12
March 2011		
3/1	<i>Permian CCUS Center: Overview of the Elements of CCS (& CO₂ EOR),an internal workshop for the Texas Railroad Commission – Austin, TX</i>	----
3/2	Eastern workshop: Innovations in IOR-EOR in the Illinois Basin (Illinois O&G Association)– Evansville, IN	89
3/4	Eastern workshop: Re-Assessing the Technically Recoverable Undiscovered Hydrocarbon Resources of the Marcellus Shale – Morgantown, WV	43
3/8-9	Rocky Mountain workshop: Shale Gas Reservoir Assessment (Weatherford Labs) – Golden, CO	60
3/9	<i>PTTC/IOGCC/OK Marginal Well Commission: New EPA Required Greenhouse Gas (GHG) Reporting Rule – Requirements and Implementation for Small and Independent Operators – Tulsa, OK</i>	31

3/10	<i>PTTC/IOGCC/OK Marginal Well Commission: New EPA Required Greenhouse Gas (GHG) Reporting Rule – Requirements and Implementation for Small and Independent Operators – Oklahoma City, OK</i>	15
3/14-16	Rocky Mountain workshop: How To Find Bypassed Pay in Old Wells Using DST Data (Montana Geological Society – course by Hugh Reid) – Billings, MT	18
3/15	Rocky Mountain workshop: Petra Intermediate Mapping – Golden, CO	16
3/17 2 pm CST	<i>AAPG/PTTC e-symposia: Basic Tools for Shale Exploration (Lindell Bridges, EQT)</i>	49
3/30	Texas/SE New Mexico workshop: Practical Salt Tectonics (Rowan) – Corpus Christi, TX	30
3/31	Eastern workshop: Michigan Field Experiences – Mt. Pleasant, MI	208
April 2011		
4/6-7	Midcontinent workshop: TORP Oil Recovery Conference (KU TORP) – Wichita, KS	128
4/9	<i>Permian CCUS Center: The Reservoir – Characterization, Modeling and Monitoring, a short course @ AAPG Annual Meeting – Houston, TX</i>	----
4/11-13	<i>Exhibit @ AAPG Annual Meeting – Houston, TX</i>	----
4/11-15	Rocky Mountain workshop: Complex Well, Core Competency 2011 (Bob Knoll) – Golden, CO	10
4/19-20	Rocky Mountain workshop: Fracture Analysis (Michael Fahy, consultant) – Golden, CO	24
4/20-21	<i>Permian CCUS Center: Permian Carbon Capture and Storage (CCS) Center, presentations by APTA's Bob Kiker @ Southwest Petroleum Short Course – Lubbock, TX</i>	----
4/26	West Coast workshop: Facilities Engineering – Bakersfield, CA	37
4/26-27	<i>Exhibit @ Texas Alliance Annual Meeting (share w RPSEA) – Wichita Falls, TX</i>	----
May 2011		
5/3	West Coast workshop: Facilities Engineering – Long Beach, CA	37
5/10-11	Rocky Mountain workshop: Completion & Stimulation(s) of Horizontal Wells in Tight and Unconventional Gas Reservoirs (Larry Britt, Tulsa University) – Golden, CO	27
5/12-13	West Coast workshops @ SPE Western Regional – Anchorage, AK	
5/12 am	>> Multiphase Metering (Parviz Mesdizadeh, Production Technology, Inc.)	20
5/12 pm	>> Introduction to Well Logging (Todd Sidoti, Schlumberger)	13
5/12 day	>> Thermal Recovery (Anthony Kovscek, Louis Castanier, Stanford University)	11
5/12 day	>> Drilling & Completions for the PE Exam (Bing Wines, Winrock Engineering Inc.)	24
5/13 am	>> Unconventional Shale Resources: Drilling, Evaluation, Fracturing and Completions Methodology and Approaches (Halliburton)	25
5/13 day	>> Production & Reservoir Engineering for PE Exam (Bing Wines, Winrock Eng.)	19
June 2011		
6/2	Rocky Mountain workshop: Petra Basics – Golden, CO	20
6/6	<i>Permian CCUS Center: Potential for Long Term Uses of Anthropogenic CO₂ in the Permian Basin, poster session @ AAPG Southwest Section Annual Meeting – Ruidoso, NM</i>	----
6/7 (Day 1)	Midcontinent workshop: Multistage Hydraulic Fracturing in Unconventional Reservoirs – Wichita, KS (Option of either or both days)	62
6/8 (Day 2)	Midcontinent workshop: Multistage Hydraulic Fracturing in Unconventional Reservoirs – Wichita, KS (Option of either or both days)	62
6/8	Rocky Mountain workshop: Reservoir Geomechanics Applied to Unconventional Reservoirs (RMAG) – Denver, CO	100

6/15	<i>Permian CCUS Center: Overview of the Elements of CCS (&CO₂ EOR), an internal workshop for the Texas Railroad Commission – Austin, TX</i>	----
6/16-17	Texas/SE New Mexico workshop: Open Software for Reproducible computational Geophysics – Houston, TX	41
6/21	Taking a Deeper Look at Shales: Geology and Potential of the Upper Ordovician Utica Shale in the Appalachian Basin (Appalachian Oil & Natural Gas Research Consortium, Ohio Geological Society, Kent State Tuscarawas) – New Philadelphia, OH	235
6/21	Rocky Mountain workshop: Completions and Stimulations for Geologists (Jennifer Miskimins, Colorado School of Mines) – Golden, CO	33
6/22	Texas/SE New Mexico workshop: Haynesville/Bossier Core Workshop (Ursula Hammes, Gregory Frebourg, Bob Loucks, Fred Wang, Ray Eastwood, STARR, Bureau of Economic Geology) – Austin, TX	40
6/25	Rocky Mountain workshop: Petrophysical Evaluation of Unconventional Reservoirs (RMS AAPG) – Cheyenne, WY	37
July 2011		
7/13	Rocky Mountain: Shale-Gas and Tight-Gas Sand Reservoirs of Utah, core workshop (Utah Geological Survey) – Salt Lake City, UT	25
7/14	Rocky Mountain: Shale-Gas and Tight-Gas Sand Reservoirs of Utah, field trip (Utah Geological Survey)– Salt Lake City, UT	11
7/14	<i>Permian CCUS Center: Making Lemonade Out of Lemons; Using CO₂ to Increase Production, presentation by APTA's Bob Kiker at Texas Alliance of Energy Producers conference, Corpus Christi, TX</i>	----
7/26	Eastern: Environmentally Friendly Drilling Systems Lowering the Environmental Footprint of Marcellus Shale Development – Morgantown, WV	57
August 2011		
8/11	Rocky Mountain: GeoGraphix Training: An Overview & Refresher – Golden, CO	16
8/18-19	<i>Exhibit @ Summer NAPE – Houston, TX</i>	----
8/25-26	Rocky Mountain: Sequence Stratigraphy, Principles and Applications – Golden, CO	25
September 2011		
9/14	Midcontinent: Technologies for a More Efficient Operation (Eastern Kansas Oil & Gas Association) – Chanute, KS	37
9/15-16	Rocky Mountain: Petra Basics – Golden, CO	20
9/22	Rocky Mountain: Bakken- Three Forks Petroleum System (Rocky Mountain Association of Geologists) – Denver, CO	374
9/25	<i>Permian CCUS Center: Understanding the Reservoir – Characterization, Modeling and Monitoring, a short course at AAPG's Eastern Section Annual Meeting, Arlington, VA</i>	----
9/27 Day 1	Midcontinent: Getting the Most Out of 3-D Seismic Data (Day 1) – Wichita, KS (Option of either or both days)	51
9/28 Day 2	Midcontinent: Getting the Most Out of 3-D Seismic Data (Day 2) – Wichita, KS (Option of either or both days)	51
9/28	Eastern: PTTC/DOE/RPSEA Gas Shales Research (AAPG Eastern Section) – Arlington, VA	36
9/28-29	<i>CCUS and ROZ (Residual Oil Zone), poster session by APTA's Bob Trentham at West Texas Geological Society Annual Meeting, Midland, TX</i>	----

Petroleum Technology Transfer Council

DOE Award No.: DE-FE-0001175

FY12 Technical Progress
October 1, 2011 – September 30, 2012

Targeted Technology Transfer to US Independents

EXECUTIVE SUMMARY

The Petroleum Technology Transfer Council (PTTC) is a unique not-for-profit network that focuses on transferring Exploration and Production (E&P) technology to the domestic oil and natural gas producing industry. PTTC connects producers, technology providers and innovators, academia, research and development (R&D) consortiums and governments. Local affordable workshops delivered by Regional Lead Organizations (RLOs), which are typically a university or geological survey, are a primary tool. PTTC also maintains a website network, issues a national newsletter, provides a column in a major trade publication, and exhibits at major industry events. It also encourages industry to ask technology-related questions, striving to find relevant answers that will save questioners significant time.

Working since late 1993, the PTTC network has a proven track record of providing industry with technology insights they can apply. Volunteers at the regional and national level provide key guidance regarding where to focus technical effort and help connect PTTC with industry. At historical funding levels, PTTC had been able to hold well more than 100 workshops per year, drawing 6,000+ attendees. As funding decreased in the early 2000s, the level of activity decreased and PTTC sought a merger with the American Association of Petroleum Geologists (AAPG), becoming an AAPG-managed organization at the start of FY08. This relationship with AAPG was terminated by mutual consent in May 2011 and PTTC once again operates independently. Chris Hall, California continues to serve as Chairman of the Board of Directors.

During FY12 PTTC conducted 49 workshops, 45 within the regions and 4 associated with national. Total attendance of 2,837 (84% from business), represents a decrease from FY11 (3,850 - 79 workshops). Funding was not available for FY12 workshops compared to FY11, when workshops were funded for the first 5 months of the year. Although the number of workshops and attendees was down from FY11, the attendance per event was up to 58 in FY12 compared with 49 in FY11. Two of the regions (Central/Eastern Gulf and Texas/SE New Mexico) were not active in FY12.

• Central/Eastern Gulf	0	0	Univ. of Alabama, LSU Center for Energy Studies
• Eastern	4	535	WV University, W. Michigan Univ., Illinois Geol. Survey
• Midcontinent	13	976	Univ. of Kansas TORP, Tulsa University
• Rocky Mountain	16	692	Colorado School of Mines
• Texas/SE New Mexico	0	0	Bureau of Economic Geology, Univ. of Texas @ Austin
• West Coast	12	491	Conservation Committee of California O&G Producers
• National	4	143	PTTC headquarters

PTTC's national program led by Headquarters (HQ) provides five essential functions: communications/technology transfer, outreach, organizational management, RLO coordination and fund raising. PTTC continued key services in the communications realm—mailing its June 2012 issue of *Network News* to 13,955 individuals (printing and postage cost paid by private donation) and distributing the September 2012 via e-Alert to 8,148. PTTC sends weekly e-Alerts of different formats to more than 8,150 individuals, authors a monthly *Tech Connections* column in *The American Oil & Gas Reporter* and maintains an integrated national-regional website network with six Tech Centers. In the outreach realm, PTTC exhibited at major industry events (North American Prospect Expo (NAPE), Summer NAPE) as well as several smaller events.

PTTC's Board met in April in FY12 addressing major issues—adjusting plans/budgets to the funding shortfall, and developing a plan for the RLO's to assume management of PTTC. Changes also occurred in responsibilities of consultants serving HQ. The required FY10 audit cited no major deficiencies. An audit was not required in FY11 or FY12, because funding was reduced below the threshold level of \$500,000. Additional contracts for Permian Carbon Capture Utilization and Storage (CCUS) training and providing tech transfer services to the Research Partnership to Secure Energy for America (RPSEA) provided work that enabled HQ to retain services of regular consultants. Revenue from ad sales continues to build.

1.0 INTRODUCTION

The Petroleum Technology Transfer Council (PTTC) was established by domestic crude oil and natural gas producers, working in conjunction with the Independent Petroleum Association of America (IPAA), the U.S. Department of Energy (DOE) and selected universities, in 1994 as a national not-for-profit organization to transfer Exploration and Production (E&P) technology to the domestic upstream petroleum industry, in particular to small independent operators. PTTC connects producers, technology providers and innovators, academia and university/industry/government research and development (R&D) groups. Coordinated by national Headquarters (HQ) staff, PTTC focuses on delivering local affordable workshops, working through universities/geological surveys in regions that cover producing areas of the U.S. Complementing the workshop program, PTTC's HQ organization maintains a strong web presence, newsletter, and exhibit and communications program.

From inception PTTC has received federal funding through DOE's oil and natural gas program managed by the National Energy Technology Laboratory (NETL). Funding was strong during early years and PTTC was able to deliver well more than 100 workshops per year, drawing 6,000 or more attendees per year. But in FY07, PTTC faced the reality of no further federal funding. PTTC sought a merger with the American Association of Petroleum Geologists (AAPG), becoming a subsidiary of AAPG and an AAPG-managed organization beginning with FY08. This relationship with AAPG was terminated by mutual consent in May 2011 as both organizations realized benefits were not being realized from the relationship. Performance during recent history has proved that PTTC is adaptable – although not necessarily thriving, PTTC is proving it can survive with different business models at both the national and regional levels. Nationally, other tech transfer-related contracts are contributing to HQ survivability. The willingness of several of the Regional Lead Organizations (RLOs) to develop a plan and create a new business model to manage PTTC and move the organization towards independence demonstrates the perceived industry need for technology transfer. Advertising sales begun in 2010 continue to build. In FY12 PTTC HQ partnered with The Energy Forum to develop three workshops on the National level (one held in the 4th quarter FY12 and two to be held during the 1st quarter 2013). HQ and the RLOs are evaluating other multiple opportunities for revenue-generating services.

As shown in Figure 1, peak activity and attendance occurred in the FY03 to FY06 time frame when federal funding was significantly higher than in FY12. Despite a plethora of organizational and funding changes in recent years, PTTC has demonstrated its ability to draw 3,000 to 4,000 individuals per year. These results combined with a strong national communications program demonstrate a still viable PTTC to O&G producers, its primary customer.

The RLOs are universities, geological surveys or other organizations that deliver workshops locally in PTTC's six regions (Figure 2), which after PTTC became independent again still remain roughly aligned with AAPG's Sections. Due to reduced funding two of the regions were inactive in FY12. PTTC has discussed with the RLO's incorporating these regions into the other regions and reducing the total to five regions while continuing to offer workshops across the U.S.

Section 2.0 provides further discussion of workshop activity. **Section 3.0** describes the national program.

Figure 1 – Historical Workshop Activity and Attendance from Inception

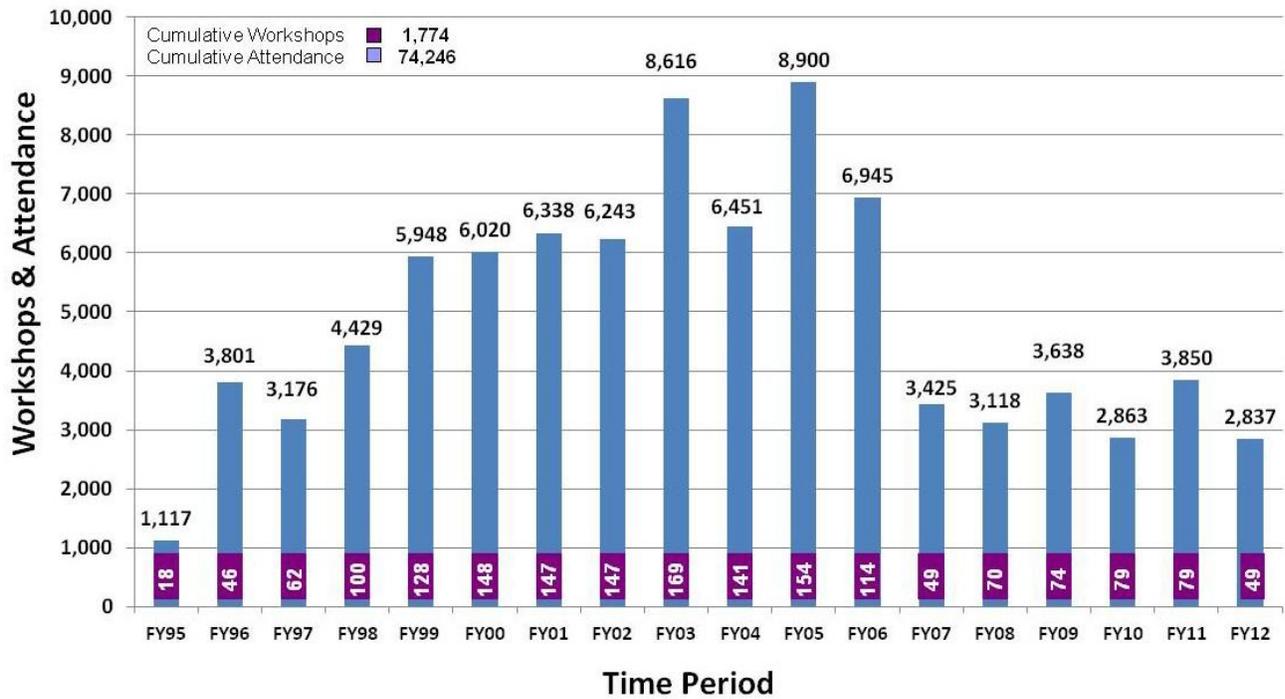
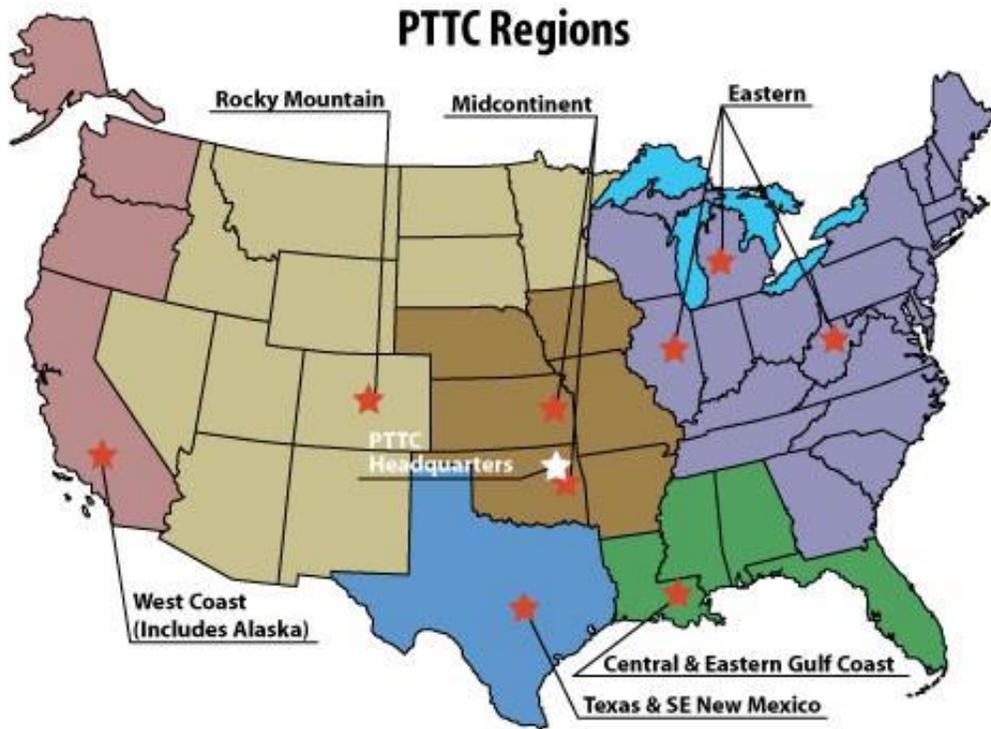


Figure 2 – PTTC Regional Map



2.0 WORKSHOP ACTIVITY

Table 1 summarizes workshop activity for FY12. Results by region by quarter are presented in Appendix A. Significant results include:

- 49 regional workshops drew 2,837 attendees (84% of attendees from industry), averaging 58 individuals per workshop. Average attendance increased 18% compared to FY11.
- The Eastern Region, which conducted 4 events, exhibited the strongest average attendance of 134 individuals per workshop. Two workshops were conducted in the Appalachian Basin, one in the Illinois Basin and one in the Michigan Basin. The Michigan Basin workshop had the highest individual attendance (210) of any workshop in FY12.
- Highest regional attendance of 976 occurred in the Midcontinent. Attendance at the 13 workshops averaged 75 individuals per workshop. Strong results were experienced in KU's workshops on the Mississippian Lime and horizontal drilling plays. The Mississippian Lime play workshop was repeated due to popular demand.
- All four active regions, Eastern, Midcontinent, Rocky Mountain and West Coast, exhibited good attendance. Sixteen workshops in the Rockies drew 692 attendees, while 491 individuals participated in 12 workshops in the West Coast Region. CCOGP's program in the West Coast was focused on specific needs of the local industry and the number of workshops and attendance was similar to FY11. Funding reductions did not impact FY12 activity in the West Coast region, In the Midcontinent Region, KU TORP's program remained active throughout FY12, and showed increased attendance over FY11. Activity in the University of Tulsa's program during the second half of FY12 was reduced. Attendance at University of Tulsa workshops held in conjunction with SPE in the 1st and 2nd quarters was low.
- The Texas/SE New Mexico RLO did not conduct any workshops in FY12 due to reduced funding.
- Programs in the Central/Eastern Gulf Region, both by the University of Alabama and LSU's Center for Energy Studies, were inactive. PTTC's agreement with the RLO from Alabama has been discontinued. The agreement with LSU is under evaluation.
- PTTC continues to address the commitment of all regions and the RLO's plan to combine the existing six regions into five to provide more consistent coverage.
- Headquarters-associated activities include cooperative workshops with the University of Southern California, The Energy Forum and the Eastern AAPG section. PTTC conducted four workshops that drew 143 people. HQ-associated activity was curtailed for the first half of FY12. Two additional cooperative workshops with The Energy Forum were planned and will be held during the 1st Qtr FY13.

Table 2 represents the combined workshop calendar for FY12. Often, the RLOs cooperate with other groups (professional societies, trade organizations, etc.) in hosting workshops. These co-sponsored events can range from quite large to very small. Where events were cooperative, the co-sponsoring organization is indicated in Table 2. Events organized by Headquarters (and attendance reported under Headquarters) are noted in *italics* in Table 2. Events where PTTC exhibited are also shown in Table 2. For information purposes only (not metrics for this contract), PTTC also listed events associated with its Permian CCUS regional training contract with DOE, and the Research Partnership to Secure Energy for America (RPSEA).

Table 1 – FY12 Activity Summary

Region	Workshops			Comments
	No.	Attend.	From E&P (%)	
Central/Eastern Gulf Coast	0	0	0 (0%)	Programs by the two RLOs, University of Alabama and LSU Center for Energy Studies, were inactive during FY12 with no workshops held. The region will be incorporated into the Eastern Region.
Eastern	4	535	412 (77%)	Major events were held in the Appalachian, Michigan and Illinois Basins. The Illinois and Michigan RLO's participated with HQ in two workshops at the AAPG Eastern Section meeting in Cleveland in September.
Midcontinent	13	976	936 (96%)	During FY12, thirteen workshops were held in Kansas and Oklahoma. The Kansas workshops were well attended. The KU Mississippian Lime play workshop was repeated due to popular demand. Oklahoma workshops are cooperative with SPE's Midcontinent Section. Attendance for workshops held at TU was low. Most recently, Kansas has focused on offering two-day workshops where attendees can attend either or both days, and a choice to participate remotely through "live" Internet broadcast is offered.
Rocky Mountain	16	692	644 (93%)	Mary Carr at the CSM delivered 16 workshops during FY12 with 15 of those being held in Colorado and one in Montana. Most Colorado workshops are held at CSM to control costs. PTTC Rockies co-sponsored the CCUS CO ₂ Forum at CMS in April. An active program is planned for FY13.
Texas & SE New Mexico	0	0	0 (0%)	No workshops were held in the Texas Region by the RLO due to reduced funding. HQ held one national workshop with The Energy Forum in the Dallas area in August. Several RPSEA workshops were held in Texas (Houston area and Midland) with PTTC assistance. The RLO's plan to incorporate the Texas region into the Midcontinent in FY13.
West Coast	12	491	292 (59%)	The FY12 program consisted of 12 workshops held in California. The cooperative effort with SPE's Western Region continues to work well for all. The number of activities and attendance was very similar to FY11. An active FY13 program is planned.
All Regions	45	2,694	2,284 (85%)	
Headquarters Total	4	143	86 (60%)	Four National workshops were held in the 3rd and 4th quarters of FY12. The topics were induced seismicity and EOR technologies.
Total FY12	49	2,837	2,370 (84%)	

Table 2 – PTTC FY12 Combined Calendar*(Italicized – event by Permian Basin CCUS Center / Shaded – event with RPSEA)*

		Total Attend.
October 2011		
10/7	<i>Permian Basin CCUS Center: Carbon Capture & CO₂ EOR – Learning Through the Permian Basin CCS Center, (paper/panel session), New Horizons in Oil & Gas Conference, South Dakota School of Mines & Technology, Rapid City, SD</i>	---
10/11	West Coast/RPSEA: Onshore Production Conference, Technological Keys to Unlocking Additional Reserves, Bakersfield, CA	28
10/13	<i>Permian Basin CCUS Center: Residual Oil Zone (ROZ) Update, Hot Plays (paper, session chair), Permian Basin Petroleum Association Annual Meeting, Midland, TX</i>	---
10/16-18	<i>Permian Basin CCUS Center: exhibit @ Interstate Oil and Gas Compact Commission Meeting, Buffalo, NY</i>	---
10/20	<i>Permian Basin CCUS Center webinar: Combining Carbon Capture & CO₂ EOR – The Business Model</i>	---
10/24	Rocky Mountain: booth @ RMAG Prospect Fair and Technofest, Denver, CO	---
10/27	Midcontinent: Surfactant Flooding, Do's and Don'ts (SPE Midcontinent), Tulsa, OK	5
November 2011		
11/3	Rocky Mountain: GeoGraphix Training; An Overview & Refresher. Golden, CO	20
11/8	Midcontinent/RPSEA: Onshore Production Conference, Lawrence, KS	27
11/8	<i>Permian Basin CCUS Center: Making Lemonade Out of Lemons, Using CO₂ to Increase Production (presentation), Texas Alliance of Energy Producers conference, Houston, TX</i>	---
11/9	<i>Permian Basin CCUS Center: Carbon Capture & CO₂ EOR, Learning Through the Permian Basin CCUS Center (presentation/exhibit during conference), 18th International Petroleum & Biofuels Environmental Conference, Houston, TX</i>	---
11/10	<i>Permian Basin CCUS Center: Overview of the Elements of CCS (& CO₂ EOR)(in-house workshop), Texas Railroad Commission, Midland, TX</i>	---
11/15-16	<i>Permian Basin CCUS Center: presentation/exhibit @ DOE's Annual CCUS Project Review Meeting, Pittsburgh, PA</i>	---
11/17	Midcontinent: Evaluation of Reservoir Quality in Gas Shales (SPE Midcontinent), Tulsa, OK	7
11/30	Rocky Mountain/RPSEA: Onshore Production Conference, Technological Keys to Unlocking Additional Resources, Golden, CO	33
December 2011		
12/5-6	Rocky Mountain: Low Resistivity, Low Contrast Pays, Golden, CO	28
12/5-9	<i>Permian Basin CCUS Center: exhibit at 2012 CO₂ Conference Week, Houston and Midland, TX</i>	---
12/6	Midcontinent: Horizontal Drilling and Completion in the Mississippi Lime – Drilling (Day One) (KU TORP), Wichita, KS	191
12/7	Midcontinent: Horizontal Drilling and Completion in the Mississippi Lime – Completion (Day Two) (KU TORP), Wichita, KS	191
12/9	Midcontinent: Compression, The Undervalued Key to Production (SPE Midcontinent), Tulsa, OK	13
January 2012		
1/9-10	Rocky Mountain: Basic Well Log Interpretation (Dan Krygowski, Discovery Group), Golden, CO	40
1/19	<i>Permian Basin CCUS: Carbon Capture & CO₂ EOR Storage (graduate/undergraduate seminar, Lance Cole & Dwight Rychel), University of Kansas, Lawrence, KS</i>	
1/19-20	Rocky Mountain: Fluvial Stratigraphy (John Holbrook, TCU), Golden, CO	17
1/23	Rocky Mountain: Source Rocks 101 (RMAG), Denver, CO	150

1/24	<i>Permian Basin CCUS: Carbon Capture & CO₂ EOR Storage(graduate/undergraduate seminar, Dwight Rychel), Colorado School of Mines, Golden, CO</i>	
1/24	RPSEA TAC mtg: Flow Assurance, Sugarland, TX	
1/24	RPSEA TAC mtg: Subsea, Sugarland, TX	
1/25	RPSEA TAC mtg: Floating Facilities/Systems Engineering, Sugarland, TX	
1/25	RPSEA TAC mtg: Geoscience/Reservoir Engineering, Sugarland, TX	
1/26	RPSEA TAC mtg: Drilling, Completions, Interventions, Sugarland, TX	
1/26	RPSEA TAC mtg: Environmental, Safety, Regulatory/MetOcean, Sugarland, TX	
1/26	Midcontinent: Applying PRMS to Unconventional Resources (Lee) (SPE Midcontinent) – Tulsa, OK	12
1/31	<i>Permian Basin CCUS: Carbon Capture & CO₂ EOR Storage(graduate/undergraduate seminar, Lance Cole), South Dakota School of Mines & Technology, Rapid City, SD</i>	
February 2012		
2/17	<i>Permian Basin CCUS: Carbon Capture & CO₂ EOR Storage(graduate/undergraduate seminar, Bill Lawson), Louisiana State University, Baton Rouge, LA</i>	
2/22	<i>Permian Basin CCUS: Carbon Capture & CO₂ EOR Storage(graduate/undergraduate seminar, Dwight Rychel), Oklahoma State University, Stillwater, OK</i>	
2/22	West Coast: Reserve Analysis, Long Beach, CA	26
2/23	West Coast: Reserve Analysis, Bakersfield, CA	58
2/16/12	<i>Permian Basin CCUS: Carbon Capture & CO₂ EOR Storage (Dwight Rychel, luncheon presentation @ SPE Midcontinent), Tulsa, OK</i>	
2/29	Eastern: Fracing and Refracing (Illinois O&G Association), Evansville, IN	120
March 2012		
3/6	<i>Permian Basin CCUS: Carbon Capture & CO₂ EOR Storage(graduate/undergraduate seminar, Lance Cole), University of Utah, Salt Lake City, UT</i>	
3/6	Midcontinent: Horizontal Drilling and Completion in the Mississippi Lime II – Drilling (Day 1) (KU TORP), Wichita, KS	144
3/7	Midcontinent: Horizontal Drilling and Completion in the Mississippi Lime II – Completion (Day 2) (KU TORP), Wichita, KS	144
3/8-9	Rocky Mountain: Pervasive Tight Gas Reservoirs, Classroom & Core Workshop (USGS core facility), Lakewood, CO	20
3/12	<i>Permian Basin CCUS: Carbon Capture & CO₂ EOR Storage(graduate/undergraduate seminar, Lance Cole), Missouri University of Science and Technology, Rolla, MO</i>	
3/12-13	Rocky Mountain: Low Resistivity, Low Contrast Pay (Montana Geological Society), Billings, MT	17
3/23	Rocky Mountain: GeoGraphix, Overview & Refresher, Golden, CO	10
3/30	Eastern: Michigan Field Experiences, Trenton Success Stories, Mt. Pleasant, MI	210
April 2012		
4/4-5	<i>Forum: Putting the Business Elements Together for CO₂ EOR Using Captured Carbon, Golden, CO</i>	65
4/10	Onshore Technology Conference, Midland, TX	40
4/11	West Coast: Cased Hole Logging, Long Beach, CA	38
4/12	West Coast: Cased Hole Logging, Bakersfield, CA	39
4/17-18	Unconventional Gas Conference, Canonsburg, PA (PTTC Eastern, cosponsored)	165
4/30	<i>Permian Basin CCUS: Carbon Capture & CO₂ EOR Storage(graduate/undergraduate seminar, Bob Kiker) University of Texas at Austin, Austin, TX</i>	
May 2012		
5/9	<i>CCS Reservoir Characterization for CO₂, Texas Railroad Commission, Austin, TX</i>	
5/9	West Coast: Step-Rate & Pressure Fall off Tests, Bakersfield, CA	40
5/10	West Coast: Step-Rate & Pressure Fall off Tests, Long Beach, CA	29
5/17	Eastern: Environmental Friendly Drilling workshop, Morgantown, WV	40

5/22	RPSEA TAC mtg: Flow Assurance, Sugarland, TX	
5/22	RPSEA TAC mtg: Subsea, Sugarland, TX	
5/23	RPSEA TAC mtg: Floating Facilities/Systems Engineering, Sugarland, TX	
5/23	RPSEA TAC mtg: Geoscience/Reservoir Engineering, The Woodlands, TX	
5/24	RPSEA TAC mtg: Drilling, Completions, Interventions, Sugarland, TX	
5/24	RPSEA TAC mtg: Environmental, Safety, Regulatory/MetOcean, Sugarland, TX	
June 2012		
6/12	West Coast: Facilities, Long Beach, CA	30
6/12	Midcontinent/KU TORP: Innovations in Water Use & Produced Water Disposal (Day 1), Wichita, KS	44
6/13	West Coast: Facilities, Bakersfield, CA	43
6/13	Midcontinent/KU TORP: Innovations in Water Use & Produced Water Disposal (Day 2), Wichita, KS	44
6/26	Rocky Mountain: Petroleum Geology for Non-Geologists (Steve Sonnenberg, CSM), Golden, CO	57
6/27	Rocky Mountain: Petroleum Engineering for Non-Engineers (Jennifer Miskimins, CSM), Golden, CO	70
6/28	HQ: Induced Seismicity workshop, Panel, Los Angeles, CA	60
July 2012		
7/10	<i>Permian Basin CCUS Center Webinar: Module 1: CCS and CO₂ Enhanced Oil Recovery (10 AM CDT)</i>	*
7/17-19	Rocky Mountain: ZetaWare Trinity 3D – Golden, CO.	11
7/24	The Influence of Plate Tectonics on Niobrara Sweet Spot Development – Golden, CO.	100
7/25	<i>Permian Basin CCUS Center Webinar: Module 2: The Reservoir - Characterization, Modeling and Monitoring (10 AM CDT)</i>	*
7/25	West Coast: Basic Reservoir Drive Mechanisms – Bakersfield, CA.	46
7/26	West Coast: Basic Reservoir Drive Mechanisms – Long Beach, CA.	36
August 2012		
8/8	HQ/The Energy Forum: MORE 2012; Maximizing Oil Recovery Economically Series – Farmers Branch, TX.	23
8/28	<i>Permian Basin CCUS Center Webinar: Module 3: CO₂ Sources, Marketing, Legal and Regulatory (10 AM CDT)</i>	*
8/29-30	Rocky Mountain: Petra Basics -- Golden, CO.	18
September 2012		
9/8	Rocky Mountain: Petrophysics of Unconventional Reservoirs - A pre-convention short course at the RMS-AAPG Annual Meeting -- Grand Junction, CO.	36
9/11	Midcontinent: TORP/EKOGA WORKSHOP: Horizontal Drilling and Completion in Shallow Zones – Is it right for Eastern Kansas? -- Mayetta, KS.	99
9/19-20	PTTC/RPSEA: UDW Conference – Woodlands, TX.	173
9/22	HQ Short Course: Enhanced Oil Recovery in the East (Appalachian, Illinois & Michigan Basins) (@ the AAPG Eastern Section Annual Meeting) – Cleveland, OH.	31
9/22	HQ Short Course: Induced Seismicity (@ the AAPG Eastern Section Annual Meeting) – Cleveland, OH.	29
9/25-26	Midcontinent: TORP Workshop: Mississippian Production: Technologies & Results – Wichita, KS.	55
9/23-25	Eastern AAPG Section Annual Meeting: exhibit – Cleveland, OH.	
9/26	West Coast: Drilling Engineering 101 Workshop – Four Points Ventura Harbor, CA.	78
9/27	<i>Permian Basin CCUS Center Webinar: Module 4: CO₂ Capture, Transportation and Operations (10 AM CDT)</i>	*

Petroleum Technology Transfer Council

DOE Award No.: DE-FE-0001175

FY13 Technical Progress
October 1, 2012 – September 30, 2013

Targeted Technology Transfer to US Independents

EXECUTIVE SUMMARY

The Petroleum Technology Transfer Council (PTTC) is a unique not-for-profit network that focuses on transferring Exploration and Production (E&P) technology to the domestic oil and natural gas producing industry. PTTC connects producers, technology providers and innovators, academia, research and development (R&D) consortiums and governments. Local affordable workshops delivered by Regional Lead Organizations (RLOs), which are typically a university or geological survey, are a primary tool. PTTC also maintains a website network, issues a national newsletter, provides a column in a major trade publication, and exhibits at major industry events. It also encourages industry to ask technology-related questions, striving to find relevant answers that will save questioners significant time.

Working since late 1993, the PTTC network has a proven track record of providing industry with technology insights they can apply. Volunteers at the regional and national level provide key guidance regarding where to focus technical effort and help connect PTTC with industry. At historical funding levels, PTTC had been able to hold well more than 100 workshops per year, drawing 6,000+ attendees. As funding decreased in the early 2000s, the level of activity decreased and PTTC sought a merger with the American Association of Petroleum Geologists (AAPG), becoming an AAPG-managed organization at the start of FY08. This relationship with AAPG was terminated by mutual consent in May 2011 and PTTC once again operates independently. A major event occurring in the first quarter of FY2013 was the transition to a RLO led PTTC with establishment of a new Board and new Executive Directors. Jeremy Viscomi and Mary Carr will serve as the Co-Executive Directors, and Jerry Anderson is the PTTC Board Chairman.

FY13 represents the fourth year in a multi-year contract with the Department of Energy (DOE) for providing technology transfer services. Budget Period 2 extensions (\$40 K, \$45K) for FY12 were granted to continue work from October 1, 2012 through January 31, 2013, and a FY13 extension (\$250 K) was granted to continue technology transfer activities through September 30, 2013. This report summarizes activity and results during workshops and activities conducted from October 1, 2012 through September 30, 2013.

During FY13 PTTC conducted 54 workshops, 50 within the regions and 5(one co-hosted by a region) associated with national Headquarters. Total attendance of 2851 (85 % from business), represents an increase from FY12 (2,837 - 49 workshops). Funding was not available for FY13 or FY12 workshops compared to prior to FY12, when workshops were funded. The number of workshops and attendees was up from FY12, the attendance per event was 53 compared to 58 in FY12. Two of the previous regions (Central/Eastern Gulf and Texas/SE New Mexico) have been combined into the Midwest and Midcontinent regions, and were underrepresented in FY13.

• West Coast	17	803	Conservation Committee of California O&G Producers
• Rocky Mountain	20	912	Colorado School of Mines
• Midcontinent	8	495	Univ. of Kansas TORP, Tulsa University
• Midwest	2	368	Illinois Geological Survey, W. Michigan Univ.
• Eastern	3	121	WV University
• National	4 (1)	152	PTTC headquarters (in 4th qt the numbers (20) are counted in the Eastern Region)

PTTC's national program led by Headquarters (HQ) provides five essential functions: communications/technology transfer, outreach, organizational management, coordination with RLOs and PTTC Board, and workshop planning for DOE topics and underrepresented regions. PTTC continued key services in the communications realm—quarterly issues of *Network News* were sent to subscribers via e-mail. PTTC sends weekly e-Alerts of different formats to more than 5,000 individuals; the executive director (Lawson and Viscomi) authors a monthly *Tech Connections* column in *The American Oil & Gas Reporter*, and maintains an integrated national-regional website network with six Tech Centers. In the outreach realm, PTTC

exhibited at major industry events; North American Prospect Expo (Winter NAPE), AAPG Annual, Summer NAPE, URTEC, as well as several smaller events.

PTTC met with DOE NETL in Morgantown, WV on January 17, 2013 to introduce new PTTC Executive Directors, and to discuss important steps in moving PTTC forward with the DOE Contract. At Board meetings in the 2nd quarter (1/22/13 & 3/19/13) new Executive Directors (Jeremy Viscomi- Midcontinent and Mary Carr-Rockies), Kathy Chapman (Director of Operations) and Board members met to discuss future plans for PTTC and continued restructuring of management. PTTC exhibited at NAPE in February 2013, sharing our new management structure and networking with many producers and industry representatives. PTTC Staff met in Tulsa, OK, on March 13th to make further plans for PTTC's newsletter, website, registration and database management software, national workshop efforts, and staff responsibilities. National activities revolved around plans, systems and management, a baseline for a stronger national organization. Following the staff meeting, PTTC staff researched Customer Relationship Software to aid in registering events and managing PTTC's database. NetForum software was purchased to manage e-mail marketing, subscription services, and event registration. Staff received training in use of NetForum. Staff was also challenged to research and plan workshops that would address industry needs and possibly DOE interests throughout FY13 and planning for FY14.

1.0 INTRODUCTION

The Petroleum Technology Transfer Council (PTTC) was established by domestic crude oil and natural gas producers, working in conjunction with the Independent Petroleum Association of America (IPAA), the U.S. Department of Energy (DOE) and selected universities, in 1994 as a national not-for-profit organization to transfer Exploration and Production (E&P) technology to the domestic upstream petroleum industry, in particular to small independent operators. PTTC connects producers, technology providers and innovators, academia and university/industry/government research and development (R&D) groups. Coordinated by national Headquarters (HQ) staff, PTTC focuses on delivering local affordable workshops, working through universities/geological surveys in regions that cover producing areas of the U.S. Complementing the workshop program, PTTC's HQ organization maintains a strong web presence, newsletter, and exhibit and communications program.

From inception PTTC has received federal funding through DOE's oil and natural gas program managed by the National Energy Technology Laboratory (NETL). Funding was strong during early years and PTTC was able to deliver well more than 100 workshops per year, drawing 6,000 or more attendees per year. But in FY07, PTTC faced the reality of no further federal funding. PTTC sought a merger with the American Association of Petroleum Geologists (AAPG), becoming a subsidiary of AAPG and an AAPG-managed organization beginning with FY08. This relationship with AAPG was terminated by mutual consent in May 2011 as both organizations realized benefits were not being realized from the relationship. Performance during recent history has proved that PTTC is adaptable – although not necessarily thriving, PTTC is proving it can survive with different business models at both the national and regional levels. Nationally, other tech transfer-related contracts are contributing to HQ survivability. The willingness of several of the Regional Lead Organizations (RLOs) to develop a plan and create a new business model to manage PTTC and move the organization towards independence demonstrates the perceived industry need for technology transfer. Advertising sales begun in 2010 continue to build. In FY12 PTTC HQ partnered with The Energy Forum to develop three workshops on the National level (one held in the 4th quarter FY12 and two held during the 1st quarter 2013). HQ and the RLOs are evaluating other multiple opportunities for revenue-generating services.

In the first quarter of FY2013 PTTC transitioned to a RLO led organization with establishment of a new Board and new Executive Directors. The new co-executive directors are Jeremy Viscomi, Midcontinent RLO and Mary Carr, Rocky Mountain RLO. The Chairman of the PTTC Board is Jerry Anderson, West Coast RLO. Board members include Doug Patchen, Eastern RLO and Joan Crockett, Midwest RLO. Chris Hall remains as an exofficio member of the Board.

As shown in **Figure 1**, peak activity and attendance occurred in the FY03 to FY06 time frame when federal funding was significantly higher than in FY13. Despite a plethora of organizational and funding changes in recent years, PTTC has demonstrated its ability to draw nearly 3,000 individuals per year. These results combined with a strong national communications program demonstrate a still viable PTTC to O&G producers, its primary customer.

The RLOs are universities, geological surveys or other organizations that deliver workshops locally in PTTC's five regions (**Figure 2**), which after PTTC became independent again still remained roughly aligned with AAPG's Sections in six regions. During the 1st quarter FY13 to improve efficiency the regions were reorganized into the present 5 regions, eliminating the Gulf Coast and West Texas/New Mexico regions. The new regional alignment is shown in **Figure 2**. The reorganization of the regions will allow improved workshop coverage while continuing to offer workshops across the U.S. Headquarters staff will provide additional workshops for underrepresented regions and address DOE topics.

Section 2.0 provides further discussion of workshop activity. **Section 3.0** describes the national program.

Figure 1 – Historical Workshop Activity and Attendance from Inception

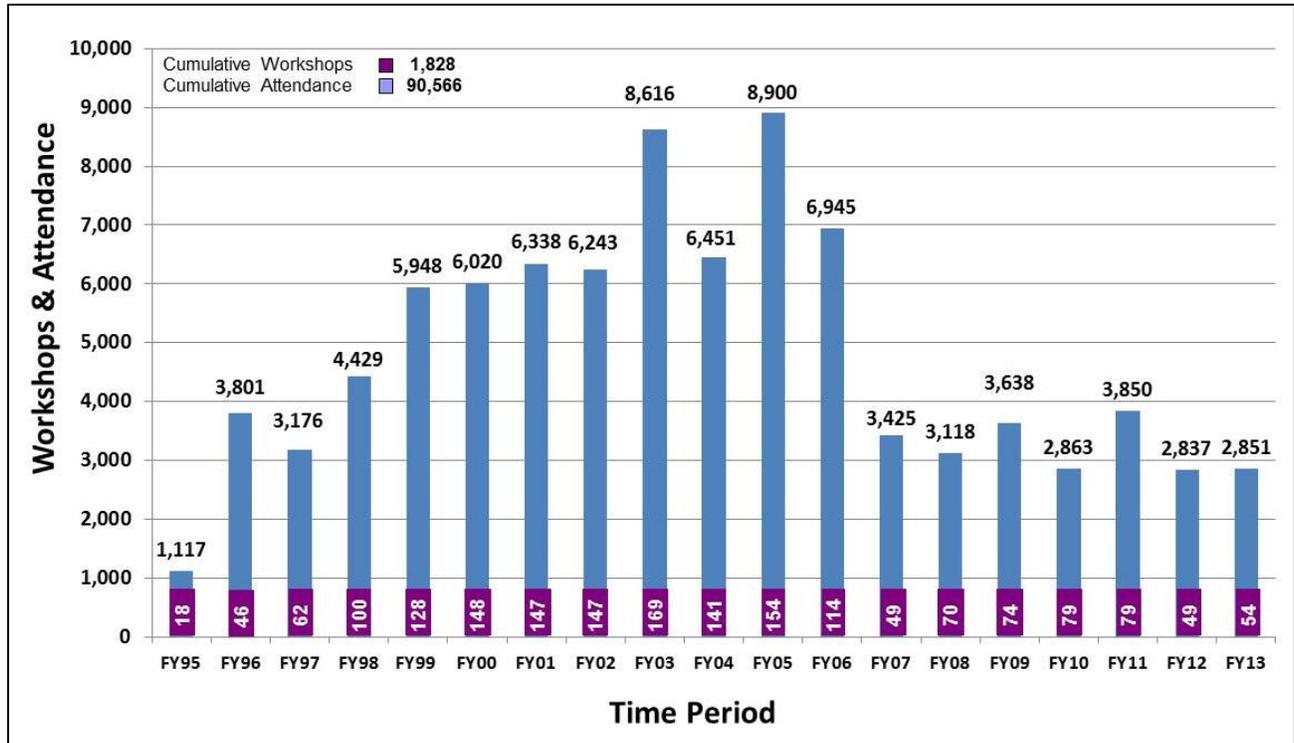
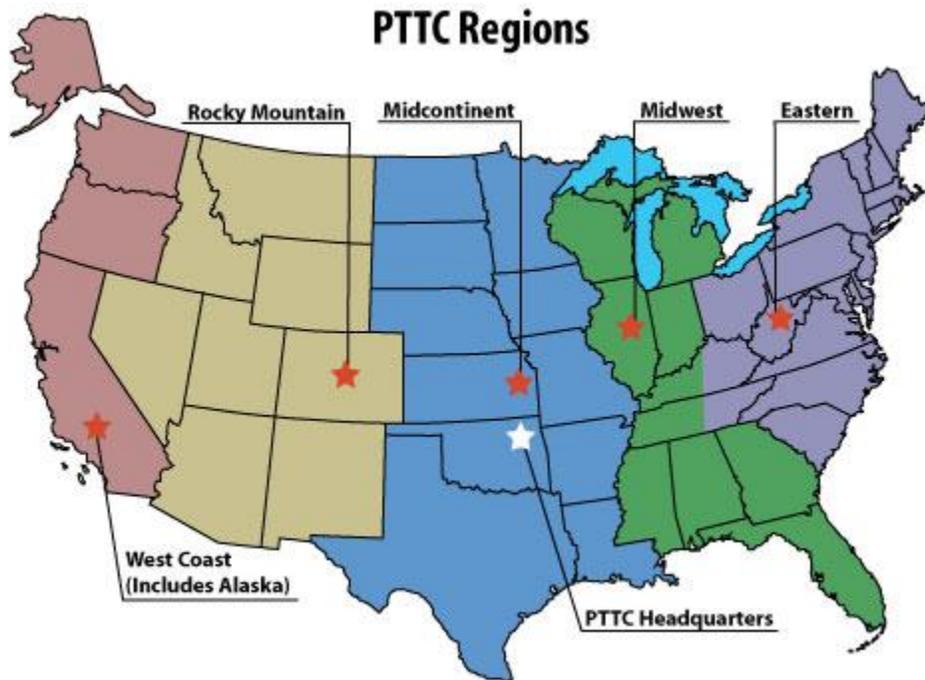


Figure 2 – PTTC Regional Map



2.0 WORKSHOP ACTIVITY

Table 1 summarizes workshop activity for FY13. Results by region by quarter are presented in **Appendix A**. Significant results include:

- 50 regional workshops and 5HQ workshops (one co-hosted with Eastern region) for a total of 54 workshops drew 2,851 attendees (85% of attendees from industry), averaging 53 individuals per workshop. The number of workshops increased, however the number of attendees was similar to FY12.
- The Midwest Region, which conducted only 2 events, exhibited the strongest average attendance of 184 individuals per workshop. One workshop was conducted in the Michigan Basin and one in the Illinois Basin.
- Highest regional attendance of 912 occurred in the Rocky Mountain. Attendance at the 20 workshops averaged 46 individuals per workshop.
- All five active regions, Eastern, Midcontinent, Midwest, Rocky Mountain and West Coast, exhibited good attendance; however the number of workshops varied considerably. The lowest attendance was in the Eastern region. Seventeen workshops attracted 803 individuals to the West Coast Region. CCOGP's program in the West Coast was focused on specific needs of the local industry and the number of workshops and attendance was similar to FY11 and FY12. Funding reductions did not impact FY13 activity in the West Coast region or Rocky Mountain regions. In the Midcontinent Region, KU TORP's program remained active throughout FY13.
- Headquarters-associated activities included cooperative workshops with The Energy Forum, the SPE Eastern section, and IOGCC. PTTC HQ conducted four workshops that drew 152 people in the 1st quarter FY13, and developed the Innovative Water Workshop, hosted in the 4th quarter by the Eastern Region. Attendance numbers for the Innovative Water Workshop are counted in the Eastern Region. Headquarters staff also organized and participated in a number of workshops through PTTC subcontracts with CCUS and RPSEA, which addressed DOE projects and goals.
- PTTC continues to address the commitment of all regions and the RLO's reduction of the regions to five will provide more consistent coverage. HQ staff will provide additional planning and workshops for underrepresented regions and address DOE topics of interest.

Table 2 represents the combined workshop calendar for FY13. Often, the RLOs cooperate with other groups (professional societies, trade organizations, etc.) in hosting workshops. These co-sponsored events can range from quite large to very small. Where events were cooperative, the co-sponsoring organization is indicated in Table 2. Events organized by Headquarters (and attendance reported under Headquarters) are noted in Table 2. Events where PTTC exhibited are also shown in Table 2. For information purposes only (not metrics for this contract), PTTC also listed events associated with its Permian CCUS regional training contract with DOE, and the Research Partnership to Secure Energy for America (RPSEA). The exception to this is for the Midcontinent region (3rd quarter, RPSEA workshop) where because of the level of participation, the attendance numbers were recorded as a PTTC workshop.

Table 1 – FY13 Activity Summary

Region	Workshops			Comments
	No.	Attend.	From E&P (%)	
West Coast	17	803	444 (55%)	California audiences continue to be interested in operations and petroleum geology topics.
Rocky Mountain	20	912	900 (99%)	Individual workshops were addressed by experts in technical aspects of petroleum geology and engineering.
Midcontinent	8	495	495 (100%)	The workshops were held in conjunction with an annual Kansas conferences and a RPSEA event.
Midwest	2	368	349 (95%)	The workshop held in Indiana was a regional (Illinois Basin) workshop on horizontal drilling. The workshop held in Michigan was an annual workshop focusing of Michigan plays.
Eastern	3	121	96 (79%)	One workshop was held in connection with PTTC HQ, two workshops were associated with the Environmentally Friendly Drilling Program.
All Regions	50	2699	2284 (85%)	
Headquarters Total	4 (1)	152	149 (98%)	Two events in the 1st quarter were associated with SPE and IOGCC conferences. The other two workshops in the 1st quarter were part of MORE 2012, a joint PTTC/Energy Forum creation. The Innovative Water workshop, Morgantown, WV was planned by HQ and hosted by the Eastern Region. It addressed 4 DOE environmental projects. The attendees are counted under the Eastern Region.
Total FY13	54	2851	2433 (85%)	

Table 2 – PTTC FY13 Combined Calendar

(Italicized – event by Permian Basin CCUS Center / Shaded – event with RPSEA)

		Total Attend.
October 2012		
10/3	HQ: SPE Eastern Region Annual Meeting, two-hr workshop – Lexington, KY (Rychel)	25 (88%)
10/10-12	Rocky Mountain: Exploring for Stratigraphic Traps using Multi-Well Pressure/Depth Plots – Golden, CO.	7 (100%)
10/16	Oil and Gas Conference, Bakersfield, CO	218 (95%)
10/23	Rocky Mountain: RMAG/PTTC Fall Symposium on Horizontal Drilling – Denver, CO.	165 (100%)
10/24	Rocky Mountain: The Fundamentals of Horizontal Well Completions and Stimulation – Denver, CO.	55 (95%)
10/29	Rocky Mountain: Petra Basics – Golden, CO.	18 (100%)
10/29-31	HQ: Induced Seismicity presentation to IOGCC Committee – San Antonio, TX. (Don Clarke)	100 (100%)
10/30-11/2	HQ: exhibit at IPEC – Denver, CO. (Viscomi & Carr)	

10/31	HQ/ Energy Forum: MORE 2012 Maximizing Oil Recovery Economically Series, EOR panel – Long Beach, CA (Schatzinger)	18 (100%)
November 2012		
11/6-8	Midcontinent: KU TORP Field Trip: Introduction To The Lower Mississippian Geology Of The Tri-State Region, Southern Ozarks – Rogers, AR.	cancelled
11/7	West Coast: Open Hole Logging – Long Beach, CA.	54 (67%)
11/8	West Coast: Open Hole Logging – Bakersfield, -- Bakersfield, CA.	70 (70%)
11/14	HQ/ Energy Forum: MORE 2012 Maximizing Oil Recovery Economically Series, EOR panel – Denver, CO (Schatzinger, Rychel)	9 (100%)
11/16	Rocky Mountain: GeoGraphix Training: An Overview and Refresher Course – Golden, CO.	cancelled
11/29	RPSEA: Onshore Production Conference – Houston, TX. (Schatzinger)	70 (95%)
December 2012		
12/4	Production Geology (Mississippian, Granite Wash, Arbuckle, Hunton, Viola, Simpson Formations), Wichita, KS	75 (100%)
12/5	Production Geology (Mississippian, Cherokee, Arkoma Basin, Morrow, Atokan), Wichita, KS	75 (100%)
12/3-7	CO ₂ Conference, Midland, TX - exhibit (Rychel)	
TBD	Rocky Mountain: Niobrara Core Workshop – Lakewood, CO.	speaker cancelled
January 2013		
1/15	RPSEA TAC mtg: Geoscience/Reservoir Engineering –The Woodlands, TX. (Schatzinger)	
1/22	RPSEA TAC mtg: Flow Assurance – Sugar Land, TX. (Schatzinger)	
1/22	RPSEA TAC mtg: Subsea – Sugar Land, TX. (Schatzinger)	
1/23	RPSEA TAC mtg: Floating Facilities/Systems Engineering – Sugar Land, TX. (Schatzinger)	
1/23	RPSEA TAC mtg: Environmental, Safety, Regulatory/Metocean –Bellaire, TX. (Schatzinger)	
1/24	RPSEA TAC mtg: Drilling, Completions, Interventions – Sugar Land, TX. (Schatzinger)	
1/24	Source Rock Kinetics - Doug Waples (RMAG), Golden, CO	100 (100%)
1/28-30	Basic Well Log Interpretation. Golden, CO	50 (100%)
1/31-2/1	Petrophysics of Unconventional Resources. Golden, CO	64 (100%)
February 2013		
2/5-8	Exhibit: Winter NAPE, Houston, TX	
2/13	Petroleum Geostatistics, Golden, CO	18 (100%)
2/20	Cementing Workshop, Bakersfield, CA	53 (64%)
2/21	Cementing Workshop, Long Beach, CA	42 (67%)
2/22	GIS and GPS for Earth Scientists, Golden, CO	19 (60%)
March 2013		
3/6	Horizontal Drilling in Mature Fields (pulls from DOE projects, Evansville, Indiana)	145 (81%)
3/7-8	Source Rocks 101 - What the Exploration Geologist, Geophysicist, and Production Engineer Should Know about Petroleum Source Rocks, Billings, MT	58 (98%)
3/13	Petroleum Geology Workshop, Long Beach, CA	50 (72%)
3/14	Petroleum Geology Workshop, Bakersfield, CA	67 (48%)
3/14	Michigan Basin Insights and Field Experiences, Mt. Pleasant, MI	223 (100%)

3/25-26	<i>Permian Basin CCUS Center: Forum 2013—A Focus on CO₂ EOR Operation – Odessa, TX.(Rychel, Schatzinger, Lovendahl, Cole)</i>	
3/26	Hydraulic Fracturing - Sacramento, CA	28 (14%)
April 2013		
4/1-2	KU TORP Improved Oil Recovery Conference, Wichita, KS	110 (100%)
4/4	Tectonic History of the Rocky Mountain Region, Golden, CO	58 (98%)
4/17	Hydraulic Fracturing, Long Beach, CA	60 (58%)
4/18	Hydraulic Fracturing, Bakersfield, CA	50 (40%)
4/23	Using Science to Profitably Explore for or Develop Oil and Gas Fields (<i>RMAG</i>), Denver, CO	86 (100%)
May 2013		
5/14	BOPE, Bakersfield, CA	53 (38%)
5/16	BOPE, Ventura, CA	27 (18.5%)
5/18-22	Exhibit at AAPG Annual Conference, Pittsburgh, PA	
5/21-23	How to Find Bypassed Pay in Old Wells Using DST Data, Golden, CO	30 (100%)
5/28	RPSEA UDW Flow Assurance TAC Meeting – Sugar Land, TX (Schatzinger)	
5/28	RPSEA UDW Subsea Systems TAC Meeting – Sugar Land, TX (Schatzinger)	
5/29	RPSEA UDW Floating Facilities and Risers & Systems Engineering TAC Meeting –Houston, TX (Schatzinger)	
5/29	RPSEA UDW Drilling, Completions and Interventions - Houston	
5/30	RPSEA UDW Environmental, Safety and Regulatory & Metocean TAC Meeting – Sugar Land, TX (Schatzinger)	
5/30	RPSEA UDW Geosciences and Reservoir Engineering –The Woodlands, TX (Schatzinger)	
June 2013		
6/11-12	Petra Basics, Golden, CO	19 (100%)
6/11-12	<i>Introduction to CO₂-EOR Workshop, Houston & Port Arthur, TX (Rychel, Schatzinger, Lovendahl)</i>	48
6/11-13	Basic Openhole Log Interpretation, Houston, TX	14 (100%)
6/15-21	Futures in Energy High School Outreach Program, Golden, CO	24 (0%)
6/20	Ichnology of Carbonate Systems, Denver, CO	44 (100%)
6/25	Controlling Formation Pressure, Bakersfield, CA	38 (31.5 %)
6/25	KU TORP Reservoir Engineering Workshop, Wichita, KS	52 (100%)
6/26	Controlling Formation Pressure, Long Beach, CA	40 (35%)
6/26	KU TORP Waterflooding Technology Workshop, Wichita, KS	52 (100%)
6/27	PTTC co-sponsored RPSEA Small Producer Conference, Wichita, KS	52 (100%)
July 2013		
7/9	Petroleum Geology for Non-Geologists (Steve Sonnenberg, CSM), Golden, CO	36 (100%)
7/10	Petroleum Engineering for Non-Engineers (Jennifer Miskimins, CSM), Golden, CO	45 (100%)
7/16	Fishing Operations, Long Beach, CA	60 (50%)
7/18	Fishing Operation, Bakersfield, CA	50 (50%)
Aug 2013		
8/3	Cementing Workshop, Golden, CO - Cancelled	
8/11	Simulating Shale Oil/Gas Wells (DOE Project), Golden, CO	16 (100%)
8/11-14	Exhibit, UTREC Conference Exhibit, Denver, CO	
8/14-17	Exhibit, Summer NAPE, Houston, TX	
8/14	GIS workshop, Bakersfield, CA	28 (54%)

8/15	GIS workshop, Bakersfield, CA	30 (50%)
8/15	Confessions of a Frac Engineer, Denver, CO	39 (100%)
8/22	Innovative Water Management, Morgantown, WV	20 (60%)
Sept 2013		
9/4	Wellbore Integrity: Improving Zonal Isolation, Canonsburg, PA	57 (86%)
9/5	Natural Gas Power for Shale Development: Using Natural Gas Fuel for Drilling and Hydraulic Fracturing, Canonsburg, PA	44(80%)
9/17	KU TORP Best Practices for Eastern Kansas Operators workshop, Mayetta, KS	65 (100%)
9/18	CCUS - CO ₂ EOR workshop for Young Professionals, Midland, TX	30 (100%)
9/18-19	Eastern Kansas Oil and Gas Association Conference- exhibit, Mayetta, KS	
9/20	Applied Reservoir Geology for Engineers, Tulsa, OK - Cancelled	
9/22	Petrophysics of Unconventional Resources (RMS-AAPG), Salt Lake City, UT	26 (100%)
9/22-24	Exhibit, RMS/AAPG Convention, Salt Lake City, UT	
9/24	KU TORP Technology Transfer - Applied Field Technology Workshop, Wichita, KS – Cancelled	
9/25	RPSEA Onshore Production Conference, Houston, TX	45

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