

PTTC Workshop Summary Report Eastern Region – Appalachian Basin

Title/Topic: “Wellbore Integrity / Improving Zonal Isolation Practices”
Date: September 4, 2013
Location: Canonsburg, PA
Co-Sponsor: Environmentally Friendly Drilling (EFD) Systems Program
Speaker(s): Thirteen plus a panel discussion at the end (**see attached schedule**)
Method Used To Advertise/Promote: E-mail distribution list among 10 local geological societies and SPE chapters, several local universities, independent oil & gas associations of several states, DOE-NETL, USGS and Appalachian basin state geological surveys; placed on national PTTC website/calendar; placed on EFD’s website; requested all speakers to distribute to members of their organization
Fee: \$150 for professionals; \$40 for students; \$250 for both days
Attendees: Industry: 49 Others: 8 Total: 57

Synopsis/Overall Assessment:

This workshop was the first of two hosted back-to-back on September 4th and 5th at the Hilton Garden Inn, Canonsburg, PA. Both workshops were co-hosted by PTTC and the Environmentally Friendly Drilling Systems Program, which is managed by the Houston Advanced Research Center.

The wellbore integrity workshop was organized to begin with presentations regarding casing and cement requirements by state regulatory agencies; concerns by groups such as STRONGER (State Review of Oil and Natural Gas Environmental Regulations), DOE’s National Energy Technology Lab, and the National Park Service; and then talks by consultants and service companies dealing with stray gas migration issues, wellbore isolation, proper cement placement practices and well integrity analysis. In the afternoon, speakers presented the results of research on lowering cost and improving operational safety and environmental impact through zonal isolation improvement; developing methods to prohibit and remediate loss of annular isolation in shale wells; well integrity and fracture containment in wells to be fractured; and systematic assessment of wellbore integrity using regulatory and industry information. The workshop ended with a 90-minute panel discussion featuring all 13 speakers and written questions from the audience of approximately 60.

The panel discussion at the end worked so well that it was extended from 60 to 90 minutes before it was necessary to cut off discussion and go to the evening reception. All of the speakers and nearly all of the audience stayed for the entire session, which is a tribute to the interest of the audience on this topic and quality of the speakers and talks that were presented.

A list of the presentations and speakers is included as the first attachment to this report.

Participant Feedback (Implies Feedback Form Is Measuring Following):

Evaluation of Speaker(s):

Fifty two percent of the respondents gave the speakers a 5 out of 5; 91% at least a 4 out of 5.

Did the workshop content deliver what advertising/promotional material promised?

Forty two percent graded the workshop as 5 out of 5 based on its meeting their expectations; 94% graded it at least a 4 out of 5.

What was the most valuable part of the workshop?

The attendees seemed to appreciate the overall balance of the program and the diversity among the speakers. This diversity made it possible to present the full range of issues, from problems in the field, research that is being conducted to resolve the issues, implementation by industry in the field, and how it all ties together to meet new and pre-existing regulations.

What was the least valuable part of the workshop?

The workshop content was fine, but several comments were made regarding the lack of time during the day to ask questions and network with the speakers and other attendees. Others liked the panel discussion and Q&A at the end, but those who had to leave early did not.

Appropriateness of attendee fee (too low, about right, too high)?

One hundred percent thought the fee was about right.

All things considered, was the workshop worth your time & money (Y/N)?

Yes; 67% thought the workshop was well organized (scored 5 of 5) and 100% gave it at least 4 out of 5.

Will you be able to use the information received and in what time frame (now, near future, at some undefined future date)?

Based on written comments received, one could assume, yes, many of the attendees will be able to use some of the workshop results in the future. When is more difficult to determine. Of the 27 people who responded to the question regarding implementation of knowledge gained at previous PTTC workshops, 8 indicated that they had done so. Also, in response to the question about willingness to share what they had learned, 18 of 26 who responded indicated that they would be willing to share, and 8 offered examples of what they would share.

Individual Written Comments of Note:

“It’s good to know there are so many, capable folks working to do a good job for commercial success and environmental protection.”

“Enjoyed the mix of operator, service, and regulatory speakers.”

“Very informative. Let me know what the state of the art is, what works, what is needed and what is being done at what level from conception to field pilot to full implementation. Also how it ties in with regulations.”



WORKSHOP
Wellbore Integrity / Improving Zonal Isolation Practices
Hilton Garden Inn, Canonsburg, PA
September 4, 2013



- 08:30 – 08:40 **Rich Haut**, HARC Environmentally Friendly Drilling
Welcome and Introductions / The EFD Program - Unbiased Science To Address Environmental Issues
- 08:40 – 09:00 **Jim Erb**, STRONGER (State Review of Oil and Natural Gas Environmental Regulations)
Collaboration to Improve State Environmental Regulations
- 09:00 – 09:20 **Dave Claus**, Ohio Department of Natural Resources
Casing and Cementing – Requirements, Engineering and Standards
- 09:20 – 09:50 **David Belcher**, West Virginia Department of Environmental Protection
Casing and Cementing – Requirements, Engineering and Standards
- 09:50 – 10:10 **Alexandra Hakala**, National Energy Technology Laboratory
NETL Studies of Well Integrity, Monitoring and Hydraulic Fracturing
- 10:10 – 10:30 BREAK / Exhibitors
- 10:30 – 10:50 **Peter Penoyer**, National Park Service
Wellbore Construction/Integrity Aspects Associated with Unconventional Resource Development
- 10:50 – 11:10 **Glen Bengé**, Bengé Consulting
Wellbore Isolation
- 11:10 – 11:30 **Paul Debonis**, Keane Group
Well Integrity Analysis
- 11:30 – 12:00 **Bryce London**, Halliburton
Practices to Ensure Proper Cement Placement
- 12:00 – 1:00 LUNCH
- 1:00 – 1:20 **Scott Anderson**, Environmental Defense Fund
A Multi-Stakeholder Approach to Improved Well Integrity
- 1:20 – 1:40 **Jessica McDaniel**, CSI Technologies
Lowering Drilling Cost, Improving Operational Safety, and Reducing Environmental Impact through Zonal Isolation Improvements for Horizontal Wells Drilled in the Marcellus Shale
- 1:40 – 2:00 **Kyle McCombs**, CSI Technologies
Development of Methods to Prohibit and Remediate Loss of Annular Isolation in Shale Gas Wells: Prevention and Remediation of Sustained Casing Pressure and other Isolation Breaches
- 2:00 – 2:20 **Carolyn Debrick**, Statoil
Well Integrity and Fracture Containment for Wells to be Fracture Stimulated
- 2:20 – 2:40 **Mark Moody**, Battelle Institute
Systematic Assessment of Wellbore Integrity Using Regulatory and Industry Information
- 2:40 – 3:00 BREAK / Exhibitors
- 3:00 – 4:00 **Tom Williams & Doug Patchen**, Moderators - Panel Discussion, all presenters

**Wellbore Integrity/Improving Zonal Isolation
September 4, 2013; Canonsburg, PA**

Attendees

First Name	Last Name	Company	City, State
***John	Allen	Keane Group	
*Robert	Anderson	Independent Geologist	Washington, PA
*Scott	Anderson	Environ Defense Fund	
***Kathleen	Antoine	Hess	Woodbridge, NJ
***Robin	Anthony	PA-DCNR	Pittsburgh, PA
***Jerry	Armentrout	Cummins Crosspoint	
*Ilkin	Bilgesu	WVU	Morgantown, WV
***David	Belcher	WV DEP	Charleston, WV
***Matt	Beltrondo	Mt. Supply & Services	Triadelphia, WV
*Glen	Benge	Benge Consulting	
*Scott	Blauvelt	East Management Serv	Sewickley, PA
***Joe	Campbell	The Ohio State Univ	Columbus, OH
*Francisco	Chacin	Shell Appalachia	Sewickley, PA
*Joe	Cohick	Mt. Supply & Services	Triadelphia, WV
*Kyle	Combs	CSI Technologies LLC	
***Renu	Chakrabarty	WV DEP	Charleston, WV
*David	Claus	ODNR	Columbus, OH
***Jeff	Daniels	The Ohio State Univ	Columbus, OH
*Harry	Dearing	Newpark Drilling Fluids	The Woodlands, TX
*Paul	DeBonis	Keane Group	
***Carolyn	Debrick	Statoil	

*Robert	Dolence		
*Andrew	Duguid	Schlumberger	Westerville, OH
*James	Erb	STRONGER	
*Jeff	Greenawalt	Susquehanna E&P, LLC	Pittsburgh, PA
*Alexandra	Hakala	NETL-DOE	Pittsburgh, PA
***Rich	Haut	HARC	Houston, TX
*Patrick	Imbrogno	GEO-COM LLC	Moon Township, PA
***Brian	Keane	Keane Group	
***Michael	Kloecker	Universal Well Services	Meadville, PA
***Olga	Koper	Battelle	Columbus, OH
***Carolyn	LaFleur	EFD Systems Program	Houston, TX
*Matthew	Lock	Anadarko Petrol Corp	Williamsport, PA
*Bryce	London	Halliburton	
***Andrew	Lowther	Energy Corp of America	Charleston, WV
*Frank	Lyon	Newpark Resources	The Woodlands, TX
*Jan	Mares	Resources for the Future	Washington, DC
*Shawn	McGuigan	Rex Energy	Cranberry Twp, PA
*Jessica	McDaniel	CSI Technologies LLC	
*Mark	Moody	Battelle	Columbus, OH
*Andrzej	Nazar	Consultant	Pittsburgh, PA
***Pete	Penoyer	National Park Service	
*James	Pritt	Enervest Operating, LLC	Charleston, WV
***Kevin	Reese	Tenaris	
*Rachel	Rischitelli	Cummins Bridgeway	Belle Vernon, PA
***Gary	Rodvelt	Halliburton	Canonsburg, PA

*Skyler	Roeshot	Resources for the Future	Washington, DC
***Russell	Roundtree	Noble Energy	Canonsburg, PA
*Donald	Ruggery, Jr	Ruggieri Enterprises, LLC	Duncanville, PA
***Natalya	Sachivichik	Chevron	Moon, PA
*Laurel	Schubert	BHI	
*Daniel	Sikorski	Schlumberger	Pittsburgh, PA
***James	Slutz	Global Energy Strategies	
***James	Stewart	Keane Group	
***Paul	Weiksner	Cummins Power Systems	Williamsport, PA
***Andra	Wilcox	EFD Systems Program	Houston, TX
***Tom	Williams	EFD Systems Program	Houston, TX

*Attended first day only

*** Attended both days

EVALUATION SUMMARY

“Wellbore Integrity Workshop”

September 4, 2013

Canonsburg, PA

1. How did you hear about the workshop?
2 Direct mailing 0 Periodical 2 Phone
20 E-mail 1 Internet/www 8 Other

2. What additional topics would you like to see in future Focused Technology Workshops?
 - Water and Water Reuse
 - Air & Water emissions at various stages of development and production
 - Drilling performance, leadership Development
 - Additional Detail on Wellbore Integrity
 - Technical Aspects of fracking
 - Containment systems
 - case studies of production from various Marcellus Fields
 - shallow well best operations
 - vapor recovery and well site processes
 - safety initiatives, well site activities
 - Microseismic---what does it really tell us?
 - drill cuttings, air monitoring
 - production logging, DTS/DAS installation
 - Abandoned/ orphaned wells

3. Are you a(n): 8 Operator (field supervisor, geologist, engineer)
 9 Service Company employee
 7 Consultant
 5 Educational Institution employee
 4 State/Federal Government employee

4. Please circle the response that best indicates your agreement, with 5 being the strongest:

A) The program met my expectations	5(14)	4(17)	3 (2)	2	1
B) The speakers/facilities were acceptable	5(17)	4(13)	3(3)	2	1
C) The program was well organized	5 (22)	4(11)	3	2	1

5. The workshop fee was: 0 too low 31 OK 0 too high

6. Additional comments: (Please use back of page if needed).
 - it's good to know there are so many, capable folks working to do a good job for commercial success and environmental protection.

- enjoyed the mix of operator, service, and regulatory speakers
- best presentation by Bryce London and Carolyn Debrick
- great job done by all
- don't wait until it's over to ask questions- most people have to leave
- very informative. Let me know what the state of the art is, what works, what is needed and what is being done at what level from conception to field pilot to full implementation. Also how it ties in with regulations.
- The facilitation was excellent. I appreciate the concept and knowledge produced.
- please minimize delay of presentations being available online.
- very good and knowledgeable speakers. Would like a slightly longer networking during the days (some participants left before the end of the session.)
- London's presentation had the best graphics!

7. Please indicate which tech transfer method is most helpful to you. Rank from 1 to 5, with 5 being the most helpful:

Workshop	5(6)	4(8)	3(0)	2 (2)	1(3)
Individual assistance	5(8)	4(4)	3(2)	2(5)	1(4)
Reports/Case studies	5(7)	4(3)	3(10)	2(2)	1(1)
Internet	5(5)	4(2)	3(9)	2(5)	1(3)
Newsletters	5(5)	4(6)	3(4)	2(3)	1(5)

8. Have you attended other PTTC events? 12 Yes (how many?) 21 No

Have you used any new technologies based on knowledge gained through PTTC events? 8 Yes 19 No If yes, please describe (in general) the application/results. (PTTC will only use your response with your permission.)

- value calculator and best practices
- for consulting knowledge and background
- dialogue between states, programs produces and initiated.
- used new drill bits that were displayed at PTTC workshops years ago
- RPSEA Marcellus fracture studies

9. Would you be willing to share with others any technology innovations or best practices?

18 Yes 8 No If yes, briefly list topics/information you are willing to share.

- high pressure drilling fluid
- well drilling, construction, testing, fracturing

- Katch Kan containment systems
- casing integrity
- old shallow field data investigation for new drilling
- more effective communications with stakeholder; how to make technology and the problems of solutions understandable to the water now
- RSPEA projects
- well integrity studies