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Welcome to 2017! A new year brings with it new opportunities. The Board is offering just such an opportunity by announcing the spring forum. The technical program will be complemented by a full day short course that will address CBM comprehensively – from reservoir characterization through methane utilization. The short course will be delivered by seasoned professionals who will passionately share their knowledge and experience. You can anticipate the two-day event to surpass your expectations and we look forward to your participation.

The theme of this quarter's newsletter is *the three R's*. No, not reading, 'riting, and "rithmetic", but rather, coalbed methane resources, reserves, and regulations. These topics are timely and included herein to help ensure readers' awareness of [CBM related] information and relevant regulatory actions. Hyperlinks are included in each article to facilitate direct access to the full body of documents including reference material associated with each topic. I hope you find these topics to be just as foundational to your livelihood as *the three R's* are to education.

John R. Duda
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MARK YOUR CALENDARS

April 11 and April 12, 2017

The North American Coalbed Methane Forum will hold its 57th forum on Tuesday, April 11 and Wednesday, April 12, 2017 at the Hilton Garden Inn, Canonsburg, PA. On Tuesday, the Forum is offering a full day short course and on Wednesday, the Forum will hold its regular spring forum session. The luncheon keynote speaker will be Mr. Christian Palich, President of the Ohio Coal Association.

The short course and technical session presentations are as follows:

A. Short course: Tuesday, April, 11 2017

- Session I Coalbed Methane Reservoir Properties and Reserves
- Session II Vertical Well Drilling and Multi-zone Hydraulic Fracturing
- Session III Horizontal Drilling: In-mine and from Surface with Hydraulic Fracturing
- Session IV Processing and Utilization of Coal Seam Gas

B. Spring forum session: Wednesday, April 12, 2017

1. Nora CBM Field in Virginia: Update and Future Plans
2. Post Election Energy Outlook
3. Dissolvable Technology for Downhole Completions
4. Water Management Including Recovery of Rare Earth and Other Elements
5. Longwall Instrumented Aerodynamic Model
6. Marcellus Shale Energy and Environmental Laboratory
7. Deep Coal CBM Potential with Application of Shale Technologies for CBM Production
8. Coalbed Methane/Coal Mine Methane: International Update

For agenda and registration information, please contact Dr. Kashi Aminian at 304-293-3964 (kaminian@wvu.edu). For forum sponsorship and advertising, please contact Ms. Beth De Maagd at 412-389- 8467 (demaagdconsulting@gmail.com).

Coalbed Methane Remains Of Consequence

U.S. coalbed methane (CBM) resources are estimated at 158 trillion standard cubic feet (TCF) as reported by the Potential Gas Committee in its latest biennial report (December 31, 2014). Most of the resource is present in the Alaska and Rocky Mountain Regions though 17.3 TCF and 11.6 TCF are estimated for the Atlantic and North Central Regions, respectively. <http://potentialgas.org/download/pgc-press-release-april-2015-slides.pdf> CBM proved reserves (end-of-year 2015) are estimated at 12.5 TCF – a decrease of 3.2 TCF v. 2014 reserves. Notably, Virginia ranks third in terms of proved reserves booking 2.1 TCF, which is a decrease of about 170 BCF (v. 2014 data). The overall percentage decrease in CBM proved reserves is comparable to the decrease in U.S. natural gas proved reserves and can be tied to the low commodity price environment that producers are facing. The latest full-year production figures indicate that 1.3 TCF of CBM was produced during 2015. Colorado, New Mexico, and Wyoming led in production but it is worth highlighting that Virginia played host to 106 BCF of CBM production. The Energy Information Administration released 2015 CBM reserves and production data in December 2016. http://www.eia.gov/naturalgas/crudeoilreserves/pdf/table_15.pdf

Assessment of Hydraulic Fracturing

The U.S. Environmental Protection Agency released its final report, Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in December 2015. <https://www.epa.gov/hfstudy> Noticeably missing in the Agency’s final assessment is the statement “We did not find evidence that these mechanisms have led to widespread, systemic impacts on drinking water resources in the United States”, which was presented in the draft release. The Agency does report that hydraulic fracturing when considering the full scope of operations can impact drinking water resources under some circumstances. Said impacts can range in frequency and severity, depending on the combination of hydraulic fracturing water cycle activities and local- or regional-scale factors. The Agency also noted that following combinations of activities and factors are more likely than others to result in more frequent or more severe impacts on drinking water resources: water withdrawals for hydraulic fracturing in times or areas of low water availability, particularly in areas with limited or declining groundwater resources; spills during the management of hydraulic fracturing fluids and chemicals or produced water that result in large volumes or high concentrations of chemicals reaching groundwater resources; injection of hydraulic fracturing fluids into wells with inadequate mechanical integrity, allowing gases or liquids to move to groundwater resources; injection of hydraulic fracturing fluids directly into groundwater resources; discharge of inadequately treated hydraulic fracturing wastewater to surface water resources; and disposal or storage of hydraulic fracturing wastewater in unlined pits, resulting in contamination of groundwater resources. Given the charge from Congress to the Agency, this final report is a must read.

Stream Protection Rule

The U.S. Department of the Interior released final regulations to prevent or minimize impacts to surface water and groundwater from coal mining. The final rule updates decades-old regulations and establishes requirements for surface coal mining that the Department asserts will protect 6,000 miles of streams and more than 50,000 acres of forests over the next two decades while allowing the Nation to meet its energy needs. The *Stream Protection Rule*, developed by the Office of Surface Mining Reclamation and Enforcement (OSMRE), includes reforms to revise regulations for coal mining in order to avoid or minimize impacts on surface water, groundwater, fish, wildlife, and other natural resources. When rolling out the rule, Janice Schneider, Assistant Secretary for Land and Minerals Management, noted “this rule takes into account the extensive and substantive comments we received state regulators, mining companies, and local communities across the country.” The final *Stream Protection Rule* will take effect on the date of

January 19, 2017, it having been published in the Federal Register on December 20, 2016. The Rule and all Record of Decision documents are available on OSMRE's website at <https://www.osmre.gov/programs/rcm/streamprotectionrule.shtm>.

Methane and Waste Prevention Rule

On November 15, 2016, the Department of the Interior announced the *Methane and Waste Prevention Rule* – a final rule designed to reduce the release of natural gas into the atmosphere from oil and natural gas operations on public and Indian lands. The rule updates 30-year old regulations governing venting, flaring, and leaks of natural gas, and will reduce methane emissions and provide a return on public resources for federal taxpayers, tribes and states. The rule, which will be phased in over time, requires oil and natural gas producers to use currently available technologies and processes to cut flaring in half at oil wells on public and tribal lands. Operators also must periodically inspect their operations for leaks, and replace outdated equipment that vents large quantities of gas into the atmosphere. Other parts of the rule require operators to limit venting from storage tanks and to use best practices to limit natural gas losses when removing liquids from wells. The final rule and associated documents are available at <https://www.doi.gov/pressreleases/interior-department-announces-final-rule-reduce-methane-emissions-wasted-gas-public>.

Hydraulic Fracturing on Federal and Indian Lands

[Though finalized in 2015, reference to this rule is noteworthy given its overall significance and specifically because of its applicability to the development of unconventional resources – e.g., coalbed methane.] The federal Bureau of Land Management (BLM), within the Department of the Interior published their [final rule on hydraulic fracturing](#), *Hydraulic Fracturing on Federal and Indian Lands*, which became effective on June 24, 2015. Consistent with its title, the rule only governs wells hydraulically fractured on Federal and Indian Lands. It does not apply to hydraulic fracturing activities on private and state-owned land where most of the well stimulations in the United States occur. The principal requirement under existing oil and natural gas regulations is the requirement of a permit for hydraulic fracturing activities. Before beginning operations, an operator must submit an Application for a Permit to Drill to the BLM and wait for approval. Securing this permit will continue under the new regulations as they supplement the existing regulations as opposed to replacing them. The rule has been subject to considerable litigation—legal challenges that readers may wish to follow.

Miscellany

The Interstate Oil and Gas Compact Commission (IOGCC) has published its marginal well report (*Marginal Wells, Fuel for Economic Growth, 2015 Report*). The report is comprehensive and provides statistics for 2011-2015. The IOGCC defines a marginal well as a well that produces 10 barrels of oil or 60 Mcf of natural gas per day or less. With respect to natural gas, 2 Tcf was produced from 378,000 marginal wells during 2015. Pennsylvania hosts the greatest number of marginal wells (65,755) followed by Texas with West Virginia third in term of well count. Texas is number one in terms of natural gas production from marginal wells followed by Oklahoma and Colorado, respectively. Some states include coalbed methane wells as natural gas wells in their response to the Commission's survey. The IOGCC's full report is available at <http://iogcc.myshopify.com/collections/frontpage/products/2015-marginal-well-report>.