North American
COALBED METHANE FORUM

Coal Seam Gas
Quarterly
Newsletter

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NACBM FORUM HOLDS ITS 56th SPRING SESSION

The forum held its annual spring session on Tuesday May 17, 2016 at the Hilton Garden Inn at Southpointe, Canonsburg PA. The session consisted of the following presentations:

1. International coal seam gas activities
2. Coal seam gas to liquids
3. Degasification prior to long wall mining
4. Shale gas drilling and well completion
5. Climate change: The implication of Paris agreement
6. Impact of coal mining on the Central Appalachian economy
7. Advancements in fiber optics diagnostics

Luncheon keynote presentation was "West Virginia Coal & Energy: 2016 and Beyond" by Chris Hamilton of West Virginia Coal Association.

NACBM FORUM HOLDS ITS ANNUAL MEETING

The forum held its annual meeting on Tuesday May 17, 2016 at the Hilton Garden Inn. The meeting heard reports from the president Dr. Pramod Thakur and vice-president/treasurer Dr. Kashi Aminian. Dr. Thakur stated that this past year was not any better than the one before and both the coal and the natural gas markets are facing great challenges. But he confirmed, that the forum will continue in its mission to advance mine safety and to promote coalbed methane/coal seam gas as a world wide energy source. Subsequently, the annual meeting elected its Board of Directors and corporate officers. Elected to the Board were: C. Byrer.C. Eckert, J. D'Amico, B. De Maagd, J. Duda, G. DuBois, G. Kozera. M. Mosser, J. Reilly, G. Rodvelt, F. Ruiz, S. Schatzel, D. Uhrin and K. White. Re-elected as officers were Dr. Pramod Thakur – President; Dr. Kashi Aminian – Vice-president/ Treasurer and Mr. Ihor Havryluk – secretary and forum newsletter editor.

SPRING 2016 CLOSING REMARKS

My name is Ihor Havryluk and I am forum's secretary and one of the founding fathers of the forum. I would like to put the current difficult times in the coal, oil and gas and minerals in perspective. As an exploration geologist, I have been in the business since mid – 1960's and have lived through a few ups and downs in the above mentioned industries. And the current down shall also pass. Back in early 1956, a prominent Shell Oil geologist by the name of M. King Hubbert predicted that US oil production would peak within 10 to15 years, and yes, fifteen years later US oil output did begin to decline and American reliance on foreign oil began to increase. In the mid-2000s, as global oil production appeared to have peaked, Mr. Hubbert became an idol of the environmentalists who dreamed of the end of oil/fossil fuels era. But, a funny thing happened on the way to the forum. Back in early 1980s, in Pittsburgh there were held Unconventional Gas Recovery Symposiums sponsored by US Department of Energy, Gas Research Institute and Society of Petroleum Engineers. The unconventionals consisted of shale gas,

coalbed methane/coal seam gas and tight sands. Two of the three, shale gas and coal seam gas, are both the source and the reservoir for the gas. One of the three, shale gas, has undergone a revolution – shale revolution – a revolution that is still continuing. The other unconventional source that is similar to shale – coal seam gas/coalbed methane – has a tremendous potential and is waiting for its own revolution. So much for predictions for running out of oil and gas!

INTERNATIONAL COAL SEAM GAS ACTIVITIES

(Excerpted from the paper by Jonathan Kelafant of Advanced Resources International)

AUSTRALIA

Australia's coal seam gas resources are estimate to be 203 TCF. In 2012, production was 246 BCF (about 13 percent of the total natural gas production). It is expected to reach 6 BCF per day by 2020. Fourteen coal basins are actively explored and/or producing coal seam gas with the Surat and Bowen Basis as the two principal producing basins. Coal seam gas production/development activity is being driven by the LNG industry. Australia is one of the leading LNG producers in the world with Qatar and United States.

CANADA

Canada's coal seam gas resources are estimated to be 801 TCF according to SCUG. Most of the resources occur in Alberta and northeastern British Columbia. Other resources have been identified in Nova Scotia, Saskatchewan and other parts of British Columbia. Production in Alberta is from the Horseshoe Canyon and Belly River coal zones that produce gas with very little water. Other coal seam gas wells have targeted the deeper, thicker Mannville coals which tend to produce substantial amount of salt water. Most of the wells drilled into Horseshoe Canyon coals are vertical wells, whereas most of wells in the Mannville Group are horizontal wells.

CHINA

China's coal seam gas resources are estimated to be 1300 TCF with the bulk n the Ordos and Quinshui coal basins. In 2014, China produce 361 MMcf of coal seam gas per day. China's goal is to integrate coal seam gas recovery and coal mining in the key coal mining areas and to increase coalbed methane/coalmine methane production from the current 130 BCF per year to 1412 BCF per year. For the past ten years, China's coal seam gas production has been rising steadily and will continue to do so.

INDIA

India's coalfields contain an estimated 120 TCF of coal seam gas distributed over forty four coalfields. The bulk of the resources are contained in the Damodan Valley coalfields, the major coal mining area of India. Over 600 coal seams gas wells have been drilled in India, mainly in the Ranigani and Sohagpur areas. That number is expected to double in the next several years as the infrastructure is developed. Since 2001, India has awarded 33 coalbed methane blocks on an international tender basis.

KAZAKHSTAN

Kazakhstan's coal seam gas resources are estimate to range between 23 to 31 TCF distributed across four coal basins: Karakanda, Ekibastuz, Zavilov and Samarskiy. While there has been an interest in coalbed methane in Kazakhstan on and off for that past 25 years, it is with in the last few years that the government owned company, Kaz Trans Gas (KTG) has started a project to drill a series of core wells and four production test wells.

SOUTHERN AFRICA

In the Southern Africa region, the coal seam gas resources are estimated to be about 110 TCF. Anglo American Corporation has conducted an extensive exploration project in the Waterberg Basin in South Africa including a five well pilot test project. Kalahari Gas and others have drilled over twenty coal seam gas wells in Botswana; further development is pending power purchase agreements.

Ihor Havryluk
Managing Editor
havryluk@zoominternet.net