

## MEMORANDUM

**DATE:** October 21, 2008

**TO:** Creties Jenkins, President, AAPG Energy Minerals Division

**FROM:** Andrew R. Scott and Jack C. Pashin, Co-Chairmen,  
Coalbed Methane Committee

**SUBJECT:** Coalbed Methane Commodity Report

### **EMD Coalbed Methane Activities:**

Coalbed methane continues to be a topic of great interest to the membership of AAPG and EMD. An oral session entitled, "Frontiers in Coalbed Methane Exploration and Development," was held at the 2008 AAPG Annual Meeting in San Antonio, Texas and was chaired by Andrew Scott and Jack Pashin. A series of excellent presentations concerning coalbed methane and carbon sequestration were presented during the session, and the session was extremely well-attended.

Abstracts can be submitted for consideration to be included in the program of the 2009 AAPG Annual Meeting, which will be held in Denver next June 7-10. Coalbed methane will be featured in a session called "Coalbed Hydrocarbons" that will be chaired by Bill Ambrose, Brian Cardott, Julia Caldaro-Baird, and Bob Lamarre.

Jack Pashin and Andrew Scott have served on the editorial board for an AAPG book on Carbon Sequestration that is a combined effort of EMD and DEG. The volume is called "Carbon Sequestration in Geological Media—State of the Science" and features 42 papers on a spectrum of geologic carbon sinks. Ten papers in this volume focus on the sequestration potential of coal and enhanced coalbed methane recovery. The volume has been submitted to AAPG for publication and should be in print as AAPG Studies in Geology 59 very soon.

### **Coalbed Methane Activity:**

The U.S. remains the world leader in coalbed gas exploration, booked reserves, and production. Currently, there is commercial coalbed gas production or exploration in approximately 12 U.S. basins and several basins in Canada. The major producing areas are the San Juan, Powder River, Black Warrior, Raton, Central Appalachian, and Uinta

(Ferron and Book Cliffs) basins. Other U.S. areas with significant exploration or production are the Cherokee, Arkoma, Illinois, Hanna, Gulf Coast, and Greater Green River basins. Exploration continues in all major U.S. basins, and the principal environmental issue confronting development is water disposal. Production operations are maturing in U.S. coalbed methane basins, and the U.S. Department of Energy is sponsoring a series of pilot tests for CO<sub>2</sub> storage and CO<sub>2</sub>-enhanced coalbed methane recovery in coal. Injection is currently taking place in the Illinois and San Juan basins, and injection tests are scheduled for the Appalachian, Black Warrior, and Williston basins.

Most of the coalbed methane activity in the eastern U.S. is focused on the Appalachian Basin of southwestern Virginia and the Black Warrior Basin of Alabama, with several companies actively developing joint CBM and CMM projects. At least 2,267 coalbed methane wells have been drilled to date in southwestern Virginia, but there are no current numbers for annual production. West Virginia had 290 coalbed methane wells and a cumulative coalbed methane production of 33.2 Bcf as of the end of 2003. The number of wells in Pennsylvania is undetermined, but cumulative production is 5.8 Bcf; annual production in 2002 was 1.7 Bcf. The advent of pinnate horizontal drilling has resulted in a significant expansion of the coalbed methane industry in the Appalachian basin by providing access to large volumes of gas in low-permeability coal seams. There are currently just over 5,000 coalbed methane wells currently operating in Alabama with a cumulative production poised to exceed 2.1 Tcf by the end of 2008.

The mid-continent region, consisting of the Cherokee, Forest City, Arkoma, and Illinois Basins is one of the more active regions in the U.S. Exploration in the Cherokee basin in Oklahoma and Kansas has spread northward to include the southern part of the Forest City Basin. The Arkoma Basin continues to produce CBM and there are multiple prospects being developed in this basin. As in the Appalachian Basin, horizontal drilling is proving to be a productive development strategy.

Infill drilling of Fruitland CBM wells in the San Juan Basin (Colorado and New Mexico) continues at a high rate. To minimize the environmental impact of infill drilling, operators are drilling deviated wells into Fruitland coal from the existing well pads. Environmental groups continue to express concern about gas seeps along the margins of the San Juan Basin in the Fruitland outcrop belt.

International activity has been on the rise, and operations in the Qinshui Basin of China are the first to prove the producibility of coalbed gas from anthracite. Intense exploration and development activity continues in western Canada, where the Horseshoe Canyon coals host a major coalbed methane play. Horizontal drilling is playing an increasingly

important role in the development of low-permeability coal seams in western Canada. Exploration and development efforts are intensifying in the Bowen, Surat, and Sydney Basins of Australia, as well as the Karoo Basin of South Africa. Coalbed methane in eastern Australia is being produced from high-permeability coal seams, and produced gas is being considered for export into Asian LNG markets. Major potential exists in the Gondwanan coal basins of India, and development of fields and pipeline infrastructure is underway. Significant potential also exists in the coal basins of Europe and the Russian platform, and development in these areas is focusing mainly on coal-mine methane. However, immense potential exists for development independent of coal mines in the large coal basins of the Russian platform.