

# ALASKA GEOLOGY

**AAPG Distinguished Lecturer**  
Alaska Geological Society



## Tight-Gas Sandstone Reservoirs: the 200-Year Path from Unconventional to Conventional Gas Resource and Beyond

**James L. Coleman, Jr.**

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*Note: AGS meetings will be at the BP Energy Center for 2010-2011.  
Please check the website ([www.alaskageology.org](http://www.alaskageology.org)) and issues of the AGS newsletter for updates.  
This announcement promotes the JOINT LUNCHEON of the Alaska Geological Society and the,  
Geophysical Society of Alaska to be held Thursday, February 17<sup>th</sup>, at the BP Energy Center.*

The evolution of tight-gas sandstones from unconventional to conventional gas reservoirs in the United States began with hydrocarbon exploration and production from the Appalachian Basin during the first half of the 19th century, when brines were the preferred product, and petroleum was the unconventional and generally undesired product. During the next 100 years, rapid development of petroleum extraction and delivery technology fed an increase in petroleum demand, such that low flow-rate reservoirs were uneconomic and unable to meet the national need. These low-flow rate reservoirs were rejected in favor of high flow-rate reservoirs in California, the Midcontinent, and the Gulf Coast. Even then, vast amounts of natural gas were flared off or vented, because no market existed for much of this produced gas.

With each successful discovery from these areas, the U.S. natural gas supply progressively exceeded demand and pipeline deliverability throughout the first half of the 20th century. In response to the "energy crisis" of the 1970's, the Federal government removed price controls on interstate natural gas in 1978 and created new tax incentives in 1980 to help offset the cost of drilling and producing unconventional gas reservoirs, including tight-gas sandstones. These decisions helped spawn a new industry and prompted geoscientists to examine the geological conditions that

### AGS Luncheon

**Date & Time:** February 17<sup>th</sup>, 11:30 am – 1:00 pm

**Program:** AAPG Distinguished Lecturer

**Speaker:** Jim Coleman

**Place:** BP Energy Center

**Reservations:** Please make your reservation before noon  
Tuesday Feb. 15<sup>th</sup>, 2010.

**Cost:** Seminar only, no meal: Free

Reserve a box lunch: \$15

Reserve a hot lunch: \$20

Lunch with no reservation:  
On an "as-available" basis only

**E-mail reservations:** [vp@alaskageology.org](mailto:vp@alaskageology.org)  
Or phone (907) 269-8673  
(Ken Helmold, AGS VP)

**For more information: visit the AGS website:**

[www.alaskageology.org](http://www.alaskageology.org)

created and preserved large volumes of natural gas in low-permeability reservoirs.

Tight-gas sandstone reservoirs exist in a wide variety of settings, ranging from simple one-well accumulations to complex montages of multilayered sand bodies requiring thousands of wells to develop. They may have a reasonably well-defined geologic limit or appear to have no spatial association with any

easily discernible mappable geologic phenomena. Understanding the true nature and future potential of yet-to-be-developed, tight-gas sandstone reservoirs is essential for the nation to supply its annual need for gas for the 21st century.

### **About the Author**

Jim Coleman is the Director of the Eastern Energy Resources Science Center, U. S. Geological Survey (USGS), which conducts research and resource assessments on fossil fuel resources and examines the effects of their presence and use on human health and the environment. At the USGS, he has continued his research on unconventional gas systems and oil and gas resource assessments in the Appalachian, Gulf of Mexico, and Arkoma-Ouachita Basins. Before joining the USGS in 2003, Jim worked for 25 years with Amoco and BP on a variety of international and domestic oil and gas exploration and production and produced water management projects.

Jim has published articles on unconventional gas reservoirs, oil and gas resource assessments, basin and petroleum system evolution, deep water sandstone deposition and reservoir development, thrust- and fold-belt structural geology and petroleum accumulations, and carbonate sedimentology. His work comparing the American Petroleum Industry with the American Whale Oil Industry was recognized with the best presentation award for his talk at the Energy Minerals Division session at the 1994 Denver AAPG annual meeting. He received an M.S. in geology from Mississippi State University in 1978. He lives in Sterling, Virginia, with his wife Jane.

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