

## **Integrated Reservoir Characterization, Deep Panuke Gas Pool, Offshore Nova Scotia**

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### **International and North American Frontiers**

The Deep Panuke gas pool, discovered by the Panuke PP-3C well in 1998, is the first major carbonate-hosted gas discovery on the Scotian Shelf. The pool was delineated in two rounds of drilling involving seven wells resulting in five successes. Production test rates exceed 1.42 E6m3d (50 MMscfd). The reservoir understanding evolved substantially during the delineation phase as new information was gathered and evaluated. Diagenesis controls secondary porosity development in fractured, vuggy dolostone and associated high-porosity leached/vuggy limestones (Wierzbicki, et al, 2006).

Recent reservoir characterization work has focused on the integration of geology, petrography, petrophysics, geophysics, well-test analysis and reservoir simulation studies. For example, petrographic observations have been integrated with petrophysically-derived porosity distributions for different lithotypes, which were then replicated in 3D seismic neural-net derived porosity volumes for application in reservoir modeling. The total rock volume is subdivided into dolostone, vuggy limestone and non-reservoir limestone lithotypes with appropriate reservoir properties applied to each. This multi-lithotype approach has led to significant improvements in the reservoir characterization. Regulatory review of the Deep Panuke Development Plan is currently under way with first gas expected in 2010.

### **Reference**

Wierzbicki, R., J.J. Dravis, I. Al-Aasm, and N. Harland, 2006, Burial dolomitization and dissolution of Upper Jurassic Abenaki platform carbonates, Deep Panuke reservoir, Nova Scotia, Canada: AAPG Bulletin, V.90, No. 11, pp. 1843-1861.