

**AAPG Annual Convention
Salt Lake City, Utah
May 11-14, 2003**

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Use of Mechanical Logs to Evaluate Gas in Place in Pennsylvanian Age Coals

A simple function is used to estimate coal-bed methane desorption from wire-line bulk density logs. The density log is calibrated to lab measured coal-bed methane desorption on cored High Volatile "B" and "A" coal samples in the Illinois Basin, Illinois, and Forest City Basin, Kansas, to obtain the function. The function has different constants and exponents for each basin. The calibrated function is applied to non-cored coals of the same type in the same basin to obtain a continuous desorption estimate over the well. Total desorbed gas in place is determined for a given drainage area. Operators can use this technique to identify high quality coals and rank coal-bed methane wells. Gamma ray and density logs are used to quantify coal, clay and rock lithology. In some cases density log values identify rock lithology without cross plotting with another lithology log such as sonic or neutron. These two methods are of particular interest because gamma ray and density are often the only logs available in coal-bed methane wells.