Fruitland Coal Increased Density Pilot Project

Gas in Place Estimates are Conservative

- Uses Low Side Gas Content from Composite As Received Isotherms as discussed earlier

- Based on density cut-off of 2.0 g/cc
  - Low quality coals above 2.0 g/cc hold gas[3,4,5]

- Current isotherm data based on pure methane
  - Produced gas from Pilot Project Area composed of methane, carbon dioxide, ethane, propane and other 'heavies'
  - Other components have higher sorption affinity than methane
  - Isotherms based on pure methane are conservative (next graph)

- Gas in place estimates based on 0.4 psi per foot initial reservoir pressure
  - Actual original pressures could be higher
  - Pressure gradients above 0.4 psi per foot have been documented in parts of the San Juan Basin[6]

3. Mavor, M. and Nelson, C.R., October 1997, Coalbed Reservoir Gas-in-Place Analysis: Gas Research Institute Reference No. GRI-97/0263
4. Close, J., Woolverton, S., Swainson, K., 1997, Non-Fairway, Underpressured Fruitland Coal Resource Characterization Study, Southern San Juan Basin, New Mexico, presented at the 1997 International Coalbed Methane Symposium at the University of Alabama, Tuscaloosa, May 12-16
5. Lamarre, R. A., Pratt, T. J., February, 2002, Reservoir Characterization Study: Calculation of Gas-in-Place in Ferron Coals at Drunkard's Wash Unit, Carbon and Emery Counties, Utah, The Mountain Geologist, Vol. 39, No 2, April 2002, pp. 41-51
6. Kaiser, W. R., Swartz, T. E., and Hawkins, G. J., Hydrologic Framework of the Fruitland Formation, San Juan Basin, Bureau of Economic Geology