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Ronald C. Johnson¹, Stephen B. Roberts¹ (1) USGS, Denver, CO

Estimate of Undiscovered Gas Resources in the Mesaverde Total Petroleum System, Uinta and Piceance Basins, Colorado and Utah

The Mesaverde total petroleum system (TPS) in the Uinta and Piceance Basins, Utah and Colorado, encompasses about 20,000 mi² and produces mainly natural gas sourced by coal and organic-rich shales in the Upper Cretaceous Mesaverde Group. The mean estimate for undiscovered gas resources in the Mesaverde TPS using the total petroleum system approach is about 13.2 trillion cubic feet (TCF). The vast majority of this gas (99 percent) occurs in unconventional, continuous-type accumulations including basin-centered gas accumulations in sandstones of the Mesaverde Group and overlying lower Tertiary Wasatch and Colton Formations, in transition zones which surround these basin-centered accumulations and in coal beds in the Mesaverde Group. Of this total, basin-centered sandstone gas accumulations in the Uinta and Piceance Basins contain 7.4 TCF and 3.1 TCF of gas respectively and the surrounding transitional gas accumulations contain 1.5 TCF and 0.3 TCF respectively. Mean estimate of coalbed methane resources in both basins is 0.9 TCF. Estimates of gas in basin-centered sandstone accumulations is slightly lower than the 1995 assessment which used a play-based approach (13.2 TCF versus 16.7 TCF), however, estimates of coalbed gas are considerably lower than the 1995 assessment, primarily because attempts to produce coalbed methane in commercial quantities from the Mesaverde Group have thus far, not been very successful due to a combination of water problems, low permeabilities, and low gas contents.