Stratigraphy and Reservoir Characterization of the Blue Monday Sandstone, Central West Virginia

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The Late Mississippian (Chesterian) Blue Monday Sandstone (BMS) is a stratigraphic unit that can be recognized in gas fields of central West Virginia. Its outcrop equivalent is the Webster Springs Sandstone. It is one of the most important unmapped stratigraphic layers in West Virginia. It is underlain by the Lillydale (Pencil Cave) Shale and Greenbrier Group (Big Lime), and overlain by the Reynolds Limestone (Little Lime) member of the Bluefield Formation, Mauch Chunk Group. The BMS historically has produced gas in seventeen counties in central West Virginia. The BMS has been an important gas producing stratigraphic unit, yet little is known about its geology. The volume of gas produced from this unit is unknown because of commingled production.

Well logs were used to correlate the strata in gas producing and non-producing wells in Braxton, Clay, Nicholas, and Webster counties, as well as the surrounding counties of Calhoun, Fayette, Gilmer, Kanawha, Lewis, Randolph, Roane, and Upshur in West Virginia. Log porosity in the BMS ranges from one to twenty percent. The Big Lime encompasses a series of ten cyclic sequences, with the top being a sequence boundary. The next sequence boundary is at the base of the Little Lime. In between, the BMS and surrounding shale strata make up a lowstand/regressive coastal sequence.