Outcrop Lithostratigraphy of the Middle Devonian Marcellus Interval in West Virginia, Pennsylvania and Virginia

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The Middle Devonian Marcellus Shale is part a large emerging unconventional shale gas play in the Appalachian Basin. This unconventional gas reservoir is distributed widely across the basin and has significant economic potential. Although the Marcellus interval is presently being drilled throughout the basin, several uncertainties remain including the definition of stratigraphic units, distribution and controls on organic richness, depositional patterns, and petrophysical characteristics. Surface exposures of the Marcellus Shale were measured, described and logged with a spectral gamma-ray scintillometer at several localities in the outcrop belt including parts of Pennsylvania, West Virginia and Virginia. The spectral scintillometer was used to correlate surface exposures to nearby subsurface data and to construct cross-sections from the outcrops to the subsurface. Detailed outcrop description tied to petrophysical data has allowed for a better understanding of the depositional history and economic potential of the Middle Devonian Marcellus Shale in West Virginia and throughout the Appalachian Basin.