

Integrated Characterization of the Devonian Marcellus Shale Play in New York State

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The Marcellus Shale has the potential to produce economic quantities of gas across south-central New York State. The Marcellus thickens from west to east (from 20 to >800 feet) and is composed of three members. The basal Union Springs Member is a black shale up to 70 feet thick with a few thin limestone beds that has TOC values from 3-12% with the highest values in the eastern side of the basin. The middle Cherry Valley Member is a limestone up to 80 feet thick with thin black shale beds that have TOC values up to 6%. The overlying Oatka Creek Member is a black and gray shale up to 650 feet thick with TOC values up to 7% that increase toward the base. Thermal maturity increases from west to east. The TOC, vitrinite reflectance and other rock eval data suggest that the fairway extends in an east-west sense about 150 miles from the western Finger Lakes across 12 counties to the Catskill Mountains in the east. The northern limit is the outcrop belt or the critical depth at which pressures are insufficient to sustain economic flow rates. Burial depths are up to 5000-6000 feet along the Pennsylvania border. X-ray diffraction analysis should be ready for this presentation. There are natural fractures associated with deep basement faults some of which are expressed as surface lineaments as well as intra-Marcellus fractures. The intra-Marcellus fractures may be beneficial, but those related to basement faults may complicate drilling, completion and production.