

Testing Depositional Models and Basin Geometry for the Utica Shale, Mohawk Valley, New York State

Kyle Jones

University at Buffalo, SUNY, Buffalo, NY 14260

kylejone@buffalo.edu

The Ordovician Utica Shale is a natural gas producing black shale that crops out in the Mohawk Valley of eastern New York State. The environment of deposition has traditionally been interpreted to be deep water anoxia in the tectonically enclosed Taconic foreland basin where accommodation space growth is thought to have initially greatly exceeded sediment supply. Smith et al. recently suggested an alternative model, however, in which the Utica was deposited on the western limb of the Taconic foreland in relatively shallow water (perhaps less than 50 m), where it on-laps the Trenton Group above what they interpret to be subaerial unconformities.

The regional basin geometry was affected by a series of syndepositional northeast-southwest trending normal faults that delimit grabens and correspondingly thickened Utica Group deposits. Distinguishing the alternative depositional models using local geological data therefore, will require careful analysis to distinguish regional and local effects on lithology and accommodation space.

Our intent is to test these alternative models based on data from field mapping as well as subsurface data. We are employing these data to construct cross sections of the post-Knox, Taconic foreland succession in the Mohawk Valley. These cross sections will allow us to reconstruct the basin geometry and compare this geometry with that of modern basins. The goal of this project is to predict zones of high TOC and to understand effects of basin evolution on deposition and preservation of black shales, ultimately resulting in greater natural gas production.