Vertical and Lateral Extent and TOC Content of Middle and Upper Devonian Organic-Rich Shales, New York State

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While most of the focus is on the Middle Devonian Marcellus Shale, there are numerous other organic-rich shales in the Middle and Upper Devonian strata of New York State that might also produce gas or liquids. The purpose of this presentation is to show in-house TOC and calcite content data, maps and cross sections of Middle and Upper Devonian black shales in New York. These organic-rich shales include from oldest to youngest the Marcellus, Levanna, Ledyard, Geneseo, Renwick, Middlesex, Rhinestreet, Dunkirk and Pipe Creek Shales. TOC and calcite content measured from well cuttings will be presented along with wireline logs in the cross sections and maps of the thickness of each organic-rich shale. All of the shales grade from thicker, organic-poor gray shales in the east to progressively thinner and more TOC-enriched to the west. The organic rich shales commonly interbedded with limestones while the gray, organic-poor shales are commonly interbedded with siltstone and sandstone. Most of the organic-rich shale bearing strata appear to onlap and pinch out on unconformities to the west. The cross sections help to develop a depositional model for the organic-rich shales that shows them forming in relatively shallow water on the present-day western or cratonward side of the basin.

The stratigraphy is quite complex as time equivalent units grade from gray shale and siltstone to organic rich shale and limestone and unconformities develop, especially in the west. Attempts will be made to unravel some of the stratigraphic complexity and establish chronostratigprahic relationships. One particularly interesting interval occurs in the far western counties where more there is an unnamed limestone unit that only occurs in the subsurface that has mistakenly been called the Tully by previous workers. The cross sections will show that this limestone appears to be part Tichenor and Menteth Limestones which are older than the Tully Limestone and part Genundewa Limestone which is younger than the Tully. The Tully is represented by an unconformity in the middle of the limestone unit. This is important as the rest of the stratigraphy makes more sense when this limestone unit is picked correctly.