Characterization of Low Permeability Hunton Group Reservoirs, Central Oklahoma

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ABSTRACT

The Ordovician-Devonian Hunton Group is an important oil- and gas-producing carbonate section in central Oklahoma. Historically, the Hunton Group has produced large volumes of oil and gas primarily from high-permeability reservoirs in the Devonian Bois d'Arc/Frisco interval located immediately beneath the Woodford Shale source rock. With the advent of horizontal drilling and large-volume fracture stimulation, both the Woodford Shale and low-permeability carbonate reservoirs in the Hunton Group are now viable targets for development. In this study, cores of the Hunton Group will be described to characterize the pore network in what were traditionally described as tight (low-permeability) rocks. Erosion associated with the post-Hunton and pre-Woodford unconformity truncates the Hunton Group on the western flank of the Nemaha Uplift. As the Hunton Group truncates beneath the pre-Woodford unconformity, progressively older Hunton strata are juxtaposed against the overlying Woodford Shale, which serves as a seal and source for the underlying carbonate. In this study, these carbonates will be examined to determine their reservoir potential. Seven cores in McClain, Cleveland, and Grady Counties, Oklahoma, have been identified as potential candidates for analysis. These cores will be described, sampled, and analyzed using thin sections, x-ray-diffraction, SEM and other appropriate methods to determine their pore types, volume and distribution. Reservoir and non-reservoir facies will be correlated to wireline logs to establish electrofacies for mapping the distribution of facies amenable to development through horizontal drilling and hydraulic stimulation.

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