

Diagenesis of the Mississippian Limestones

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Mississippian Limestones are a major target for hydrocarbon exploration in northern Oklahoma. The Mississippian Limestones are widespread and continuous in northern Oklahoma, but the target zones such as the “chat” are not continuous. The heterogeneity and compartmentalization of the unit are partially related to depositional control but diagenetic alteration can also have an effect on the reservoir properties. For example, diagenetic processes can increase or decrease porosity and permeability. In this integrated diagenetic and paleomagnetic study, the nature and timing of the diagenesis will be investigated to better understand the variations within the Mississippian Limestones. Cores from northern Oklahoma will be used in this study. Core descriptions, petrographic and SEM analysis, and geochemical analysis (Sr isotopes to determine if the rocks were altered by externally derived fluids) will be used to develop a paragenetic sequence. Paleomagnetic analysis will be used to determine the timing of the diagenetic events. With this study, a better understanding of the Mississippian Limestone characteristics will be investigated and could help with the exploration and production of Mississippian Limestone wells in northern Oklahoma.