

## **Characterization of Kinderhookian and Osagean Strata of Northeast Oklahoma**

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Mississippian strata of the midcontinent are prolific hydrocarbon reservoirs but the Lower Mississippian carbonates prove challenging to geologists working the play. The main focus of this work is to characterize the Lower Mississippian section of northeast Oklahoma, while also determining their spatial distribution in the subsurface. In order to accomplish this, the stratigraphic position of these rocks in the subsurface must be determined. A broad description of lithology and porosity is intended for the study area, while also determining the distribution and depositional environments of this Lower Mississippian section. The study area is located in northeast Oklahoma on the geologic province known as the Cherokee Platform and is situated on the southwest flank of the Ozark dome. This area was located between 10-15 degrees south of the equator, on a shallow water carbonate platform known as the Burlington Shelf during early Mississippian time. This thesis will encompass 8 Oklahoma counties in northeastern Oklahoma from T29N to T17N and R1E to R17E. Thorough investigation will be carried out through methods such as subsurface geologic mapping, well log correlation, Formation Micro-Imager (FMI) log interpretation, core descriptions, outcrop studies, and geospatial analysis. The results of this work will better provide an insight to the depositional environment, spatial distribution, stratigraphic position, and reservoir properties of Lower Mississippian strata in the subsurface of northeast Oklahoma. The product of this work will further the understanding of Mississippian strata in the subsurface of the midcontinent and help constrain the deposition of the Mississippian section in northeast Oklahoma.