

Sedimentology and Diagenesis of Mississippian (Kinderhookian and Osagean: Tournaisian and Visean) Reefs in Southwest Missouri, Northwest Arkansas, and Northeast Oklahoma

Beau T. Morris
Wichita State University, Department of Geology
Wichita, Kansas
morrisgeo@me.com

Carbonate buildups (reefs) are components of many carbonate depositional systems. Their origins, biotic compositions, site of formation, and diagenesis are key elements in understanding and determining whether they may be viable petroleum exploration objectives in the subsurface. Likewise, putting Lower Mississippian buildups in my tri-state study area (southwest Missouri, northwest Arkansas, and northeast Oklahoma) into a sequence stratigraphic framework may enable their recognition in the subsurface of northern Oklahoma and Kansas, where they may be petroleum reservoirs. Buildups in the Kinderhookian Compton Formation and Osagean age Pierson Formation were deposited in anomalously thick sections related to syndepositional tectonism. Where such tectonism is indicated by: 1) the presence of down-lapping strata, and 2) the presence of dislodged buildups. The overall depositional and internal architecture of these buildups show signs of change throughout time from calcite-clotted micrite to micritic-rich bryozoan cored buildups. It is yet to be determined whether cement fabrics are those of marine or meteoric origin. Therefore, it is the effort of this study to provide a better understanding of Kinderhookian and Osagean (Tournaisian and Visean) carbonate buildups deposited throughout the midcontinent with a temporal analysis of buildups in outcrop and a model for recognizing buildups in the subsurface.