**Buildup and shoal facies analogs of the Aptian-Albian reservoirs of the Maverick Basin, Mural Limestone, Arizona**

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Cretaceous carbonate shelf systems, including patch reef complexes, are host to some of the world's most prolific and complex oil and gas reservoirs. Patch reef complexes are still poorly understood due to their heterogeneous development and distribution; much of our understanding stems from outcrop studies where a clear link between external geometry and stratigraphic context is demonstrated. The Mural Limestone of SE Arizona provides an exceptional analog for productive patch reefs of similar size, geometry, and facies composition from the Aptian James Limestone trend and the Albian Lower Glen Rose patch reef play of the Maverick Basin.

The Mural Limestone is exposed in a number of folds and east-dipping fault blocks in the Mule Mountains and at the Paul Spur locality near Bisbee, Arizona. The Mural Limestone represents a shelfal remnant of a south-facing distally-steepened ramp profile that prograded into the Chihuahua Trough during the Aptian-Early Albian. This study documents the detailed Mural facies architecture and stratigraphic setting of patch reefs and their associated shelf facies at the parasequence level, an important aspect of Mural depositional history that is missing from current literature. Transgressive lower Mural facies include intercalated siltstones and mollusk-Orbitolina wackestones. Buildup-bearing aggradational upper Mural facies are composed of coral-stromatoporoid boundstones and rudist floatstones with associated cyclic detrital rudstones to packstones. Small, tabular biostromes consisting of rudist framestomes are common landward of the coral-stromatoporoid boundstone facies. Grain-rich progradational cycles cap the buildup-dominated facies. This study employs a combination of standard field techniques (section measuring, photomosaic tracing, and RTK GPS-guided mapping) and use of detailed digital outcrop characterization of patch reefs using ground-based LIDAR to develop an integrated sequence stratigraphic framework. Recognition of key petrofacies and parasequence-level stratigraphy are enhanced with thin section, porosity and permeability, and carbon isotope analyses. All data are integrated within a 3D geocellular model using Polyworks and Petrel, which allows for predictive understanding of Mural facies within the sequence framework and provides a statistical understanding of patch reef dimensions and distributions for improved subsurface modeling.