

Lithofacies Variability and Reservoir Quality of the Strawn Reef Limestone: Eastern Shelf, Permian Basin

Parker Brant

ABSTRACT

The Strawn Reef limestone is a middle to late Pennsylvanian (Desmoinesian) age series of discontinuous biohermal build ups spanning 120 miles from southern Schleicher to northern Nolan County along the Eastern Shelf of the Permian Basin. These bioherms form the basis of reservoirs of Pennsylvanian age along the Eastern Shelf. Jameson, Nena Lucia, and Rowan & Hope NW. Buildups are composed of a variety of marine organisms: crinoids, bryozoa, phylloid algae, and foraminifera, with crinoids and phylloid algae being the most common. Three lithofacies--argillaceous crinoidal wackestone – packstone, lithoclast packstone, and cortoidal grainstone-- represent the great variability in carbonate development of biohermal buildups that exist along the Eastern Shelf, from ramp to rim profiles.

Moldic and interparticle pores are the most common in the Strawn trend. Moldic pores were formed in cortoidal grainstone lithofacies. Interparticle pores are best developed in grainstones and packstones and have the greatest porosity and permeability. The extent of syntaxial overgrowth and coarse – blocky calcite cement are responsible for variability in reservoir quality, defined as porosity and permeability.



Advisor: **William A. Ambrose**

(Signed Name)
(Printed Name)