

FORMATION AND EVOLUTION OF STRAND PLAIN OOID GRAINSTONES ON THE LEEWARD MARGIN OF WEST CAICOS, BRITISH WEST INDIES

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Abstract

Shallow water carbonate platform islands such as West Caicos are primarily comprised of wind and wave driven strand plain grainstones. Due to their large grain size and homogeneity, these ooid grainstones have high reservoir potential; consequently, it is important to understand their nature, formation, and evolution. The Pleistocene coastal ooid grainstone trends along the western edge of West Caicos have been mapped in detail by hand and by unmanned aerial Vehicle. This study uses these detailed maps along with new grain size trend and paleocurrent measurements in order to understand the provenance, spatial distribution, and accumulation rates of the foreshore and shoreface grainstones. The results obtained from paleocurrent trends and petrographic analysis will indicate whether the grains are locally sourced or transported from another location on the platform. Understanding the formation and evolution of shelf edge grainstones provides information into strand plain barrier island formation and provides insight into reservoir potential. On a larger scale, understanding the evolution and reservoir potential of modern shelf edge grainstones provides an analogue for ancient isolated carbonate platform reservoirs, such as the Tengiz field in Kazakhstan.

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