

INFLUENCE OF BIOTURBATION ON RESERVIOR QUALITY OF MIOCENE CARBONATE SLOPE DEPOSITS; INSIGHTS FROM THE GREAT BAHAMA BANK

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ABSTRACT

The objectives of this research, focused on highly cyclic, bioturbated slope carbonates of the Great Bahama Bank, are to (1) describe the sedimentology, diagenesis, and ichnofabrics of highly-cyclic, intensely bioturbated carbonate lithologies, (2) examine the effects of bioturbation on diagenetic patterns and reservoir parameters such as primary and secondary porosity, pore throat sizes, geometries, and connectivity, and (3) identify ways in which bioturbation influences paragenesis and petrophysical characteristics of carbonates, particularly as it pertains to porosity and permeability enhancement. These parameters will be compared across a depth transect, from proximal and distal parts of the leeward slope of the Great Bahama Bank, in cores recovered by ODP Leg 166. To accomplish these objectives, the methods will include (1) a detailed description of selected bioturbated intervals, (2) micro-CT scans of selected plugs, to aid in visualization of burrow networks and pore connectivity in three dimensions, (3) physical properties analysis to provide porosity and permeability data, and (4) thin section analysis, to yield a robust micro-facies analysis and provide information on burrow-induced diagenetic microfabrics. A detailed review of core photos and other data from the IODP Janus Web Datapages will be carried out to pre-select target intervals for inspection at the Bremen repository. The data collected from this study will provide new information regarding the influence of bioturbation on the development and formation of heterogeneous carbonate reservoir rocks.

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