

HIGH-ENERGY CARBONATE-SAND ACCUMULATION, THE QUICKSANDS, SOUTHWEST FLORIDA KEYS¹

EUGENE A. SHINN,² BARBARA H. LIDZ,² AND CHARLES W. HOLMES³

²*U.S. Geological Survey*

600 4th St. South

St. Petersburg, Florida 33701

and

³*U.S. Geological Survey*

Denver Federal Center

Denver, Colorado 80225

ABSTRACT: High-resolution seismic-reflection profiles of the Quicksands, located along a broad ridge on the platform shelf west of Key West, Florida, indicate a significant deposit of non-oolitic carbonate sand occurs in a belt 47 km long by 28 km wide. The surface of the belt is ornamented by large (5 m), migrating tidal bars, oriented in a north-south direction, on which sand waves, oriented in an east-west direction, are superimposed. Some of the sand waves are awash at low tide. The sand waves are formed by strong reversing tidal currents flowing between the Gulf of Mexico and the Straits of Florida. The waves migrate directly over Pleistocene bedrock to the east, but the deposit thickens to the west and sand waves there overlie non-oolitic Holocene accumulations as thick as 12 m. Westward-dipping accretionary bedding indicates that net migration of the sands is to the west, despite north-south movement of tidal currents. The westward edge of the accumulation has accreted over deeper, muddier deposits.

Although tidal currents and resultant bedforms appear identical to those of active ooid deposits in the Bahamas and elsewhere, no oolitic grains were found in this study. Thin-section analyses show the principal component (average 48%) of the sands is fragmented plates of species of the green alga *Halimeda*, followed by particulate coral (average 17%), which increases off the flanks of the main sand body. Short vibracores confirm the presence of cross-bedding.