

FACTORS CONTROLLING CARBONATE SAND DISTRIBUTION IN THE SHALLOW SHELF ENVIRONMENT: ILLUSTRATED BY THE TEXAS CRETACEOUS

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ABSTRACT

Carbonate sands, attractive potential petroleum reservoirs, are present in significant concentrations adjacent to the shelf edge, at the shore line, and associated with reef development. On the basis of the writer's studies of the Lower Cretaceous carbonate sequences in Texas this paper outlines conditions whereby significant deposits of carbonate sand can be concentrated in the shallow-shelf environment, an area usually characterized by the deposition of fine grained carbonate mud and silt.

Three major conditions must be met before carbonate sands can be deposited: (1) grains must be available; (2) high energy must be present to winnow the fines and concentrate the coarser grains; and (3) high-energy conditions must persist long enough to concentrate the sands. The first condition is easily met because of abundant fossil or biogenic material. The shallow shelf generally is a low energy environment, therefore, the problem is to find a situation whereby high energy conditions might persist long enough to concentrate significant deposits of coarse grained material.

The most obvious high energy situation occurs during a marine transgression across the shelf, but Texas Lower Cretaceous sequences indicate that transgressive deposits generally are deeper, water, muddy sediments.

In a regressive situation, the high energy zone shifts in front of the zone of concentration toward the shelf edge, allowing previously deposited sands to be preserved. The potential for widespread carbonate sand in the regressive phase is borne out by the presence of widespread, blanket, carbonate sands in Lower Cretaceous regressive sequences.

Structural elements within the shelf tend to influence bottom topography for a long time, and positive features become the site of relatively high energy and of the deposition of carbonate sand bodies surrounded by fine-grained carbonate sediments. Structural control of carbonate-sand deposition is illustrated by Lower Cretaceous Fredericksburg linear carbonate sandstone bodies coincident with the San Marcos and Concho arches in Central and West Texas.

ATURIA ALABAMENSIS (MORTON) IN JACKSON BEDS AT CREOLA BLUFF, MONTGOMERY, LOUISIANA

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ABSTRACT

A single specimen of *Aturia alabamensis* was found in the lower Yazoo Clay or upper Moody's Branch Marl at Creola Bluff on the Red River at Montgomery, Louisiana. Other reports of the occurrence of this species at various localities in the Gulf Coast region emphasize its absence from equivalent age beds in the Louisiana-Texas area. The scarcity of this pelagic animal in the above lithologic units suggests possible ecologic implications.