Linear Shoals of the Jeter Limestone Member of the Rodessa Formation in the Ark-La-Tex Region

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ABSTRACT

The Jeter Limestone is encased in anhydrite stringers within the Lower Anhydrite Stringer Member of the Rodessa Formation. Mapping of the Jeter Limestone showed three northwest trending parallel shoals with two of these shoals having minimum lengths of 45 miles and widths of 1–2 miles. The Jeter Limestone shoals are bounded on the southeast by the Rodessa Fault System where all three shoals are trapped and productive of hydrocarbons in Rodessa–Friendship–Iron Lake fields, Rodessa (Anhydrite Stringer 5750) Field, and Kelley Bayou Field. Southeast of the Rodessa faults, Jeter deposition is widespread and not organized into distinct shoals. The northwest limit of Jeter Lime shoal deposition can not be determined due to a lack of well control but is limited by shorelines and highlands of south Arkansas and the Texas Gulf Coastal Plain.

The southern boundary of these Jeter Limestone shoals at the Rodessa Fault System is well over 100 miles inboard of the Stuart City Reef Trend, which defines the Cretaceous platform margin. At such a great distance, tidal flows could not provide the energy to develop these shoals. Within the area of the Lower Anhydrite Stringer development, tectonic activity of the Rodessa Fault System apparently created a lagoon to the north within which Jeter Limestone carbonate grains were re-worked and deposited in shoals during higher energy events between the low energy anhydrites. Examination of sidewall cores at Iron Lake Field, Cass County, Texas, found a mixed ooid-skeletal-peloidal packstone. These limestones were not part of active ooid shoals, but were shed into relatively deeper marine settings and re-worked by long-term paleotrade winds. Many examples exist of carbonate depositional systems that must rely on trade winds for energy. A modern example is on the Caicos Platform where strong trade winds have created shoals in excess of 50 miles in length.

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