
Volume Fractions of Lithologic Units Deposited per Geologic Epoch in the Cenozoic, Keathley Canyon and Walker Ridge, Deepwater Gulf of Mexico: Part 2—Limestone and Marl

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ABSTRACT

There is virtually no literature describing the distribution of Cenozoic limestone in the deepwater Gulf of Mexico for two reasons: (1) most people assume any limestone found in the deepwater area is of Cretaceous age; and (2) because the limestone found in boreholes in the deepwater region is usually micritic in nature, and thus non-hydrocarbon bearing, there is little interest in it, even as a geologic curiosity. Within the study area that primarily covers Keathley Canyon and Walker Ridge Cenozoic limestone has been catalogued in 58 wells (and observed in another seven new wells). Additionally, there are two wells with rafted Cretaceous limestone and six wells with normally placed Cretaceous limestone at the bottom of the borehole. There also are six wells in southeastern Keathley Canyon with what may be rafted Eocene limestone on top of salt. A map view of the Cenozoic limestone well locations shows an interesting depositional pattern with an equally interesting void in the middle as does a map of Cenozoic marl occurrence. Contour maps of marl depositional thickness compared to those of limestone in the same geologic epoch show an inverse relationship, meaning in locations where there is a large volume fraction of limestone, there is a small volume fraction of marl, and vice versa. In the deepwater environment, there is a mineralogical relationship between the CaCO₃, silt, and clay components deposited on the seafloor, which we believe determines whether limestone or marl is deposited over time. These observations and interpretations are based primarily on wellbore data described and catalogued by onsite mudloggers during the drilling process.

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