
Midway Shale: Post-Cretaceous/Paleogene Boundary Deposition

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ABSTRACT

The Paleocene Midway Group was deposited as several hundred feet of shale across a large portion of the northern Gulf of Mexico Basin. It lies in sharp contact with the Top Cretaceous, raising questions about its relationship to the underlying Cretaceous/Paleogene (K/Pg) Boundary Deposit. Another unresolved issue is determination of the source of the clay that produced so much shale. We have performed dissolution in 10% HCl to determine the weight percent of insoluble and soluble material in a conventional core which crosses the Cretaceous/Paleogene boundary. Visually the core consists of three distinct portions: (1) a lower light-colored carbonate, (2) a middle dark-colored carbonate, and (3) an upper dark shale, locally called the Midway. The lighter carbonate averages about 25% insoluble materials, the middle is about 45% insoluble, and the Midway Shale is >90% insoluble.

We suggest that no unique processes operated immediately following the catastrophic Cretaceous bolide impact to cause deposition of the extensive dark shale of the Midway Group. Processes responsible for the fine-grained siliciclastic sediments of the Midway were already underway in the basin during the Late Cretaceous as expressed in the latest Cretaceous carbonate/marl. The Chicxulub impact event simply reduced northern Gulf carbonate accumulation, leaving the insoluble, clay-rich non-carbonates to dominate resulting in deposition of the Midway Shale. What follows from this deduction is the question of what prevented contemporaneous coarse-grained clastic accumulation during deposition of the Midway.