Regional Lithostratigraphy of the Eagle Ford Shale: Maverick Basin to East Texas Basin

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ABSTRACT

The Upper Cretaceous Eagle Ford Shale, an emerging gas-shale play in the Maverick Basin and the adjacent western San Marcos Arch in South Texas, extends at least 250 mi (400 km) farther northeastward to the East Texas Basin. The full Eagle Ford Shale play has yet to be defined. Depth, thickness, and rock characteristics of the unit across its subsurface area of occurrence provide a first approximation of potential producing areas.

Within the Maverick Basin/Rio Grande Embayment area, the Eagle Ford Shale extends from outcrop to as deep as ~15,600 ft (~4,755 m) in northeast Webb County at the limit of deep well coverage at the Sligo shelf margin. The unit, as thick as ~660 ft (~200 m) in the western Maverick Basin, gradually thins northeastward toward the San Marcos Arch and then thickens northeastward of the arch. Within the Maverick Basin, the unit lies below the Austin Chalk and above the Buda Limestone, comprising two units: a lower unit of primarily high gamma-ray mudrock and an upper zone of interbedded high and low gamma-ray mudrock. The Eagle Ford Shale thins by >95% from the Maverick Basin to the crest of the broad San Marcos Arch, where the unit thickness ranges from ~12 to 70 ft (~4-21 m). Only the lower, organic-rich mudrock facies occurs on most of the arch, attaining depths of as much as ~14,130 ft (~4,307 m) at the Stuart City shelf margin in central De Witt County. In the East Texas Basin, the fluvial-deltaic Woodbine Group occurs between the Eagle Ford Shale and the Maness Shale, with the Buda Limestone below the Maness Shale. With facies pinch-out of the sandy Woodbine complex in the southwest part of basin, however, the Buda Limestone–to–Austin Chalk interval comprises mostly mudrock of the Maness, Pepper, and Eagle Ford shales. In contrast, the same interval just southwest of the basin consists of only the lower Eagle Ford Shale. The Eagle Ford Shale pinches out against the Sabine Uplift, but it is as much as 450 ft (140 m) thick in the center of the East Texas Basin, ranging from ~3,500 to 10,200 ft (~1,070-3,100 m) in depth.

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