

# **Paleogeographic and Sequence Stratigraphic Framework for Mesozoic Carbonate Exploration on the Northwest Gulf of Mexico (NW GOM) Rim**

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## **Abstract**

Mesozoic stratigraphy of the NW GOM rim from east-central Mexico to TX-LA (USA) records: (1) U. Triassic–late M. Jurassic rifting marked by creation of basement highs (e.g., Sabine uplift) and lows (e.g., Sabinas Basin, Mexico; east Texas and northern Louisiana salt basins (ETSB and NLSB)), and deposition of red beds and Callovian age salt (Louann). (2) U. Jurassic–early U. Cretaceous passive margin accumulation (15,000–20,000 ft); (3) late U. Cretaceous Laramide foreland basin development (east-central, NE Mexico) and basement reactivation. NW GOM passive margin stratigraphy consists of four 2nd-order supersequences (SS 1—U. Bathonian to L. Kimmeridgian (“158.5” – “144” myr), SS 2—L. Kimmeridgian to Berriasian (“144” – “128.5” myr), SS 3—Valanginian to L. Aptian (“128.5” – “112” myr), SS 4—L. Aptian to U. Albian (“112” – “98” myr) marked by regional patterns of facies retrogradation (2nd-order TST) overlain by facies progradation (2nd-order HST). Productive carbonate reservoirs are assigned to specific 2nd-order systems tracts of each supersequence, thus providing a predictive framework for exploitation (reservoir characterization), as well as providing a template for exploration.

Rift-generated basement structures and patterns of early salt movement influenced U. Jurassic and early Cretaceous facies architecture and paleogeography, controlling the location of principally stratigraphic traps (e.g., grainstone reservoirs and pinnacle reefs of the Cotton Valley Lime/Troy Lime and James Lime in the ETSB and NLSB). Structural traps affecting Barremian Sligo and Albian Edwards reservoirs in south Texas result from a combination of post-U. Cretaceous salt-influenced tectonics and Laramide basement reactivation (e.g., Totanaca, Sabinas Basin).