

Stratigraphy Framework of The Fox Hills Sandstone and the Lewis Shale Formation. Great Divide Basin, Wyoming.

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Deepwater slope and basin sandstones within the Lewis Shale (Maastrichtian) of the Great Divide Basin of Wyoming were sourced from feeder systems of coeval Fox Hills Sandstone deltas. As Fox Hills Sandstone deltas within the ancestral Red Desert delta-system prograded southward, they overlapped and eventually overlapped the growth fold of the Antelope Arch. High sediment supply and southward delta-front migration occurred mainly during *Baculites grandis* (70 my) through *Baculites clinolobatus* (~ 69 my) time. A subsurface correlation study based on 20 parasequences defined by flooding surfaces shows the evolution of the prograding delta-fronts associated with four large-scale cycles, or clinothemes. The study relates the timing of deposition of turbidite sandstones within the Lewis Shale related to the hydrocarbon productive fields: Hay Reservoir, Siberia Ridge, Echo Springs and Standard Draw, and the evolution of Fox Hill feeder systems in the early history of the growth fold. The paleogeographic location of the turbidites in each cycle shows compensational patterns, more reflecting delta-front geometry than seafloor topography. The study also documents the syndepositional tectonic control of the Antelope Arch on the paleogeography of the shelf-slope break as well as its control on delta-front stacking patterns during the growth-fold overlap phase (declining tectonic activity?) of progradation.

The study area covers 3600 mi² (9324 km²) in the Great Divide basin, south-central Wyoming. The data set for the research included 230 well logs, description of 8 cores, outcrop study from Bairoil area, and 25 stratigraphic cross sections constructed.