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Tectonic Controls on Delta-Front and Deepwater Sandstone Stratigraphy: Lewis Shale and Fox Hills Sandstone of the Northern Great Divide Basin, Wyoming

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 deltas. As Fox Hills deltas within the ancestral Red Desert delta-system prograded southward, they overlapped and eventually overlapped the growth fold of the Lost Soldier-Wertz anticline. A subsurface correlation study shows the evolution of the prograding delta-fronts, associated shelf-slope breaks, and distribution of correlative deepwater sandstone bodies through time in study area in northern Great Divide basin. The study relates the timing of deposition of sandstone bodies at the Lewis-productive Hay Reservoir field to the evolution of Fox Hill feeder systems in the early history of the growth fold. It also documents the syndepositional tectonic control of the Lost Soldier-Wertz growth fold 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 includes ~ 1900 sq mi in the Great Divide Basin, joining Sweetwater, Carbon and Fremont Counties in south-central Wyoming. Data used for the study consist of more than 100 well logs, 22 cores, and limited seismic data.