

Sequence Stratigraphy of Lower Cretaceous Strata, U.S. Eastern Gulf Coastal Plain

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Six depositional sequences of 3 to 11 million years' duration have been recognized in Lower Cretaceous strata of the Mississippi Interior Salt Basin area of the eastern Gulf Coastal Plain. These are the LKEGR-1 (Lower Cretaceous, Eastern Gulf Region) (132 to 121 Ma), LKEGR-2 (121 to 118 Ma), LKEGR-3 (118 to 114 Ma), LKEGR-4 (114 to 110 Ma), LKEGR-5 (110 to 105 Ma), and LKEGR-6 (105 to 98 Ma) depositional sequences. The LKEGR-1 depositional sequence includes the Hosston Formation (Hauterivian to earliest Aptian Age). The sequence includes an unconformity and transgressive surface at the Cotton Valley-Hosston contact, transgressive systems tract deposits (Hosston marine sandstones), and highstand systems tract deposits (Hosston fluvial-deltaic sandstones). The LKEGR-2 depositional sequence includes the Sligo Formation (Early Aptian age). The sequence includes an unconformity and transgressive surface at the Hosston-Sligo contact, transgressive systems tract deposits (Sligo carbonate mudstones), and highstand systems tract deposits (Sligo fossiliferous limestones). The LKEGR-3 depositional sequence includes the Pine Island Shale, "Donovan" sandstone and James Limestone (late Early to Late Aptian age). The sequence includes an unconformity and transgressive surface at the Sligo-Pine Island contact, transgressive systems tract deposits (Pine Island marine shales), and highstand systems tract deposits ("Donovan" fluvial sandstone and James fossiliferous limestones). The LKEGR-4 depositional sequence includes the Bexar and Rodessa formations (Late Aptian to Early Albian age). The sequence includes an unconformity and transgressive surface at the James-Bexar contact, transgressive systems tract deposits (Bexar carbonate mudstones), and highstand systems tract deposits (Rodessa marine fossiliferous limestones). The LKEGR-5 depositional sequence includes the Ferry Lake, Mooringsport, and Paluxy formations (middle Early to Middle Albian age). The sequence includes an unconformity and transgressive surface at the Rodessa-Ferry Lake contact, transgressive systems tract deposits (Ferry Lake lagoonal anhydrites and Mooringsport marine shales and fossiliferous limestones), and highstand systems tract deposits (Paluxy marginal marine and fluvial sandstones). The LKEGR-6 depositional sequence includes the Andrew and Dantzler formations (Middle Albian to Early Cenomanian age). The sequence includes an unconformity and transgressive surface at the Paluxy-Andrew-Dantzler contact, transgressive systems tract deposits (Dantzler calcareous sandstones and Andrew marine shales and fossiliferous limestones), and highstand systems tract deposits (Dantzler fluvial sandstones and shales and Washita-Fredericksburg fossiliferous limestones). These depositional sequences can be identified, mapped and correlated throughout the area. They are interpreted to be the result of a combination of post-rift tectonics, variations in siliciclastic sediment supply and dispersal systems, and eustasy. These depositional sequences, where integrated with biostratigraphic data, have the potential to be correlated throughout the Gulf of Mexico area to provide a framework for regional and potential global correlation of Lower Cretaceous strata.