

Sequence Stratigraphy of the Pennsylvanian (Atokan) Gilcrease Sandstone, Hughes County, Oklahoma

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A sequence stratigraphic study in a total of 26 townships, covering Hughes County in Southeast Oklahoma for the Atokan interval, which includes the Gilcrease sandstone, identified six sequence boundaries using well log and core data. The six sequence boundaries represent six fourth-order sea-level cycles between the Morrowan and the Desmoinesian. Four of the identified sequence boundaries are marked by valley incision. The paleo-incised valleys trend from northwest to southeast into the Arkoma basin. Core description identified open-marine and estuary mouth facies indicating transgressive filling of the incised valleys during the transgressive systems tract at the location of the cored well. The difference in the thickness of each sequence is attributed to variations in accommodation and sediment supply.