

Stratigraphy and Paleo-hydraulics of Upper-slope Submarine Channel Deposits of the Brushy Canyon Formation, West Texas

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The Brushy Canyon Formation, a predominantly fine-grained siliciclastic system, was deposited on the slope and basin floor of the late Paleozoic Delaware Basin. This project focuses on resolving intra-channel sediment sorting within upper-slope channel deposits, in comparison to channel fills on the proximal basin floor.

Grain-size analyses show that particles in the 200-400 μ m range are common in the channel-filling deposits of upper-slope channels, but are poorly represented in the upper-slope bank-attached bars and channel fills on the proximal basin floor. The bank-attached bars and basin-floor channel fills primarily consist of particles finer than 200 μ m, which I interpret as the size fraction that was fully-suspended on the upper slope. The bank-attached bar deposits are interpreted to have accumulated in bank-attached zones of separated flow. They are enriched in particle sizes finer than 200 μ m because only fully suspended particles can be advected into the bank-attached zones of flow separation in significant volumes. Particle sizes coarser than 200 μ m are interpreted to have been extracted from transport on the slope and are therefore absent in channel filling deposits on the basin floor. I will synthesize depositional styles and grain-size data in order to: 1) construct a comprehensive facies model for thick bank-attached bar deposits, built by sediment sourced from suspension in separation zones associated with planform irregularity in submarine channels, 2) estimate flow velocities and current thicknesses, and 3) assess sediment sorting and storage between channels on the upper slope and proximal basin floor.