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From Fill to Spill: Partially Confined Depositional Systems, Magnolia Field, Garden Banks, Gulf of Mexico

The formation of fill and spill channel complexes is a complex balance between the creation of accommodation space and the local sedimentation rate. This dynamic balance controls the channel architecture that develops and changes systematically through deposition. The B20/25 complex of Magnolia Field is one of several reservoirs deposited at the southern end of a salt bounded mini-basin in the Garden Banks protraction area. This complex was deposited in the transition from the ponded basin succession to the bypass facies succession indicating that the salt movement and its ability to create accommodation space was waning and subsidence was becoming the main space creating force.

Integrated analysis of sedimentological core description, dipmeter image logs and pressure data with detailed seismic facies analysis has lead to the interpretation that the B25 is an amalgamated channel complex that became more intensely amalgamated as the system came to the southern margin of the mini-basin and felt the effects of the salt-induced topographic high. The system did not pond up against the salt ridge, but erosively amalgamated as the local gradient increased. The system then continued into the next basin to the south. The B20 interval corresponds to the overlying leveed channel complex that developed when the system evolved into a "bypass" system directing most of the sediments down system and formed levees through overbank and flow-stripping processes.