

TREVIÑO, RAMÓN H., Bureau of Economic Geology, John A. and Katherine G. Jackson School of Geosciences, The University of Texas at Austin, University Station, Box X, Austin, TX 78713-8924, ROBERT G. LOUCKS, L. FRANK BROWN, AND RANDY L. REMINGTON, Bureau of Economic Geology, John A. and Katherine G. Jackson School of Geosciences, The University of Texas at Austin, University Station, Box X, Austin, TX 78713-8924

### **General geology of the Mid-Tertiary block 889 field area, offshore Mustang Island, Texas**

The structural and stratigraphic architecture of the Block 889 field area, offshore Mustang Island, Texas, was defined by the integration of 3-D seismic, wireline logs, and engineering data. The area has produced 145 Bcf (billion cubic feet) of gas and 3 MMbbl (million barrels) of condensate since the mid-1960's. Shale-withdrawal controlled the structural evolution of the area. Three growth faults define the boundaries of two distinct structural blocks (i.e., faulted subbasins). The lower productive intervals were deposited in a third-order lowstand deltaic systems tract ("deep Frio") and within principally incised-valley fills that eroded outer shelf high-frequency highstand systems ("middle Frio"). Most reservoirs correlate with the middle part of the "Hackberry" erosional and lowstand depositional episode (~27.3–26.9 Ma) in southwestern Louisiana. Hydrocarbon traps are third- and component fourth-order lowstand incised-valley fill or proximal, prograding-wedge sands cut by nonexpansion, synthetic faults within the subbasins. "Shallow Frio" production is from fourth-order lowstand sands deposited within a third-order lowstand systems tract. Synthetic faults developed near the end of growth-fault movement in response to either extensional strain caused by (slippage) rollover or differential compaction of hanging-wall sediments. We recognize two types of reservoir drives: volumetric and finite water complicated by retrograde gas condensation. Reservoir compartments exhibit unique reservoir behaviors and should, therefore, be produced accordingly. New drilling opportunities include (1) reservoir compartments abandoned because of premature watering out; (2) untapped closures; and (3) off-structure stratigraphic pinchout traps.