

**AAPG Annual Convention  
Salt Lake City, Utah  
May 11-14, 2003**

Ricardo I. Combellas-Bigott and William E. Galloway, The University of Texas at Austin, Austin, TX

### **Origin and Evolution of the Middle Miocene Submarine Fan System, East-Central Gulf of Mexico**

The Middle Miocene depositional episode (MM episode) is bounded by the *Amphistegina B* (15.5 Ma) and *Globorotalia fishi robusta* (12.5 Ma) faunal tops, and records the first major invasion of clastics onto the east-central gulf abyssal plain. A well-organized, sandy submarine fan (MCAVLU Fan) formed in the modern deepwater east-central Gulf of Mexico during the MM episode. Eastern displacement of this system from its contemporary deltaic depocenter is remarkable, especially in the early stages of its evolution.

Three seismic sequences, bounded by widespread condensed sections, record the evolution of the fan. Decreasing percentage of sand and structural control, increasing development of turbidite channel fills, and general westward shift of the sediment dispersal system are characteristic of the MCAVLU Fan. Three seismic sequences bounded by condensed sections recorded the evolution of the MCAVLU Fan. Each seismic sequence is affected by salt tectonism in the slope. Dormant salt ridges and plateaus, shallow salt sheets, salt welds, and basement faults composed the mosaic of relic structures that control the deposition of the MCAVLU Fan. Seismic Sequence 1 shows the greatest influence of the relic salt structures. Sequence 1 is mostly composed by sandy mounded and sheet like turbidites, that followed a tortuous NNW-SSE corridor of connected minibasins down the slope.

Deposits of Seismic Sequence 2 migrated westward, and are dominated by turbidite channel fills in the slope and abyssal plain, and vertically stacked, multi-lobe turbidites in the abyssal plain. In the final stage, Seismic Sequence 3, two major depositional axes are present. The western axis is characterized by turbidite channel fills in the slope, and sand-rich amalgamated lobes in the abyssal plain. The eastern axis is dominated by channel-levee complexes and vertically stacked multi-lobe turbidites, without the influence of salt.