

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

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### **Tertiary Sequence Stratigraphy Offshore Brazil: High Frequency Sequence Development and Giant Avulsion**

Extensive prograding systems occurred in the northern Santos basin offshore Brazil during the Eocene. A high number of well-developed high frequency sequences are identified within the prograding systems. The high frequency sequences are arranged in prograding, aggrading and retrograding sequence sets. Deposition of the high frequency sequences were probably in response to high frequency cycles of relative sea level changes produced by variable rates of subsidence and uplift superimposed on high frequency eustatic cycles within a lower frequency eustatic system. The aggrading/prograding sequence sets are interpreted to represent increased accommodation and deposition within the third order highstand systems tract. Conversely, the prograding sequence sets are interpreted to represent decreasing accommodation and deposition within the forced regressive- and lowstand systems tract. The recognition of multiple sequence sets likely reflects the effect of long term relative sea level fall superimposed on high frequency eustatic cycles. The terminal sequence boundaries of the Eocene sequence represent the timing of maximum subaerial erosion and probably represent times of greatest potential for deposition of reservoir sands. In the latest stage of the Eocene shelf progradation however, the shelf aggrades, and at the transition to the Oligocene the progradation shifts landward and north-eastwards into the Campos Basin. This major shift in the locus of sedimentation is interpreted as a giant avulsion, and probably reflects the northward propagation of the onshore uplift. In the Campos Basin major turbidite fans containing giant oil fields are associated with the Oligocene sequence development. Yet another northeastward shift in progradation occurred in the Miocene. Also here large turbidite fan systems developed in response to the interaction of higher- and lower order frequency sequences.