

HGS Dinner Meeting, October 30, 1995

(Please note that the usual meeting date has changed)

Salt Kinematics, Depositional Systems, and Implications for Subsalt Hydrocarbon Exploration, Eugene Island and Ship Shoal South Additions, Offshore Louisiana

By Kenneth J. Thies and David J. Hall, Excalibur Interpretation Company, Houston

Detailed interpretation and mapping of more than 10,000 km of 80-fold 8-second recent seismic data, and preliminary interpretation of 2500 km of new 15-second, 6-km streamer data provide a new understanding of the kinematic and stratigraphic development of the southern Louisiana shelf. The new data reveal elongated basins below horizontal salt sheets or evacuated horizontal salt welds. These basins are separated by nearly vertical salt welds and residual salt walls. Sequential back-stripping of balanced depth sections suggests that the walls grew primarily by down-building. Sand fairways developed between the salt walls with a primary sediment trans-

port direction from the northeast to the southwest.

The overlying strata are characterized by backward-rotated hanging walls overlying listric growth-faults. We propose that the original extent of salt sheets emplaced near the sea floor can be defined by the current location of the extended overburden that formed as a result of secondary salt-sheet withdrawal. Windows through the residual salt, horizontal salt welds, and a few key deep wells that have penetrated the welds provide biostratigraphic control on the timing of the salt/sediment interactions. The vertical welds and walls, coupled with re-

sidual salt sheets and horizontal welds, form a network of surfaces separating largely isolated basins. Each basin seems to have developed independently by various episodes of local salt motion. The Mahogany discovery, Ship Shoal 349, is an example of sands trapped against the flank of a northeast-trending nearly vertical salt weld. Maps of the former salt sheets associated with salt walls and welds, and maps of subsalt structure below the sheets and welds define prospective areas analogous to Mahogany. Additional attractive structures were also localized by salt-sediment interactions. ■



Kenneth J. Thies received an M.S. in Geology (1977) from Queens College CUNY. He worked for Western Geophysical, Geomap Company, Home Petroleum, and TGS-

Calibre before joining Excalibur Interpretation Company.



David J. Hall received his Ph. D. in Geology and Geophysics (1974) from the University of Massachusetts. He worked for Gulf, International Oil and Gas, Total

Minatome, and TGS-Calibre before joining Excalibur Interpretation Company.