MEETINGS

HGS EVENING HORS D' OEUVRES MEETING—MONDAY, MAY 10, 1993
Social Period & Poster Sessions, 5:15 p.m. - 6:30 p.m.
Speaker presentation with convention style seating, 6:30 p.m. - 7:15 p.m.
Post Oak Doubletree Inn

FRED A. DIEGEL—Biographical Sketch

Fred Diegel is Research Manager for the Structure and Tectonics Section at Shell's Bellaire Research Center in Houston. He graduated from Franklin & Marshall College in 1980 with a B.A. in geology. He received M.A. (1982) and Ph.D. (1985) degrees in structural geology from The Johns Hopkins University where he studied the geometry of imbricate thrusting in the Southern Appalachians. He joined the Global Geology Section of Shell Research in 1985. In 1985-88, he was part of a large team studying the tectono-stratigraphic evolution of the Cenozoic Gulf of Mexico. Other projects since that time include additional regional structural studies in the northern Gulf of Mexico, palinspastic reconstruction of cross sections from the salt and growth fault regime, studies of the 3-D geometry and kinematics of growth fault networks, and 3-D seismic interpretation techniques.

CENOZOIC STRUCTURAL EVOLUTION AND TECTONO-STRATIGRAPHIC FRAMEWORK OF THE NORTHERN GULF COAST CONTINENTAL MARGIN

Structural evolution of the northern Gulf Coast is controlled by progradation over deforming, largely allochthonous, salt structures derived from a Jurassic salt section. The variety of structural styles is due to a range of Mesozoic salt structures, a variety of slope depositional styles, and the degree of salt withdrawal. Non-genetic tectono-stratigraphic provinces describe regions of contrasting structural styles. Provinces include 1) autochthonous salt provinces around the salt basin margins, 2) detachment fault provinces onshore and on the shelf, 3) fault-bounded mini-basin/peripheral salt provinces, 4) tabular salt provinces on the continental slope, and 5) fold and thrust provinces at the base of the continental slope. Shale-based detachment systems, dominated by lateral extension, and allochthonous salt-based detachment systems, dominated by subsidence, can be distinguished by geometry, reconstruction, and subsidence analysis. Many shale-based detachments are linked to deeper salt-based detachments. Large extensions above detachments are balanced by salt withdrawal. Salt withdrawal mini-basins with associated salt bodies occur as isolated structural systems and as a component of salt-based detachment systems. With progressive salt withdrawal during progradation, mini-basins evolve from slope basins above tabular salt to shelf basins bounded by arcuate growth faults. Associated salt bodies evolve from pillows, ridges, and massifs to leaning domes and steep-sided stocks. Allochthonous salt spreads from inclined salt bodies that appear as feeder faults when collapsed. Coalesced salt tongues from multiple feeders form canopies which provide subsidence potential for further cycles of salt withdrawal. The Sigsbee Escarpment is the expression of salt flows overriding the abyssal plain tens of kilometers since the Paleogene. The distribution and reconstruction of Oligo-Miocene salt-based detachments and mini-basins implies that a Paleogene salt canopy, covering large areas of the present onshore and shelf, may have extended as far as the Sigsbee salt mass.