Wednesday, February 2005

Petroleum Club • 800 Bell (downtown)
Social 11:15 a.m., Lunch 11:45 a.m.

Cost: $25 with advance reservations, $30 for walk-ins, space available

The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@hgs.org, or call the office at 713-463-9476 (include your name, e-mail address, meeting you are attending, phone number and membership ID#).

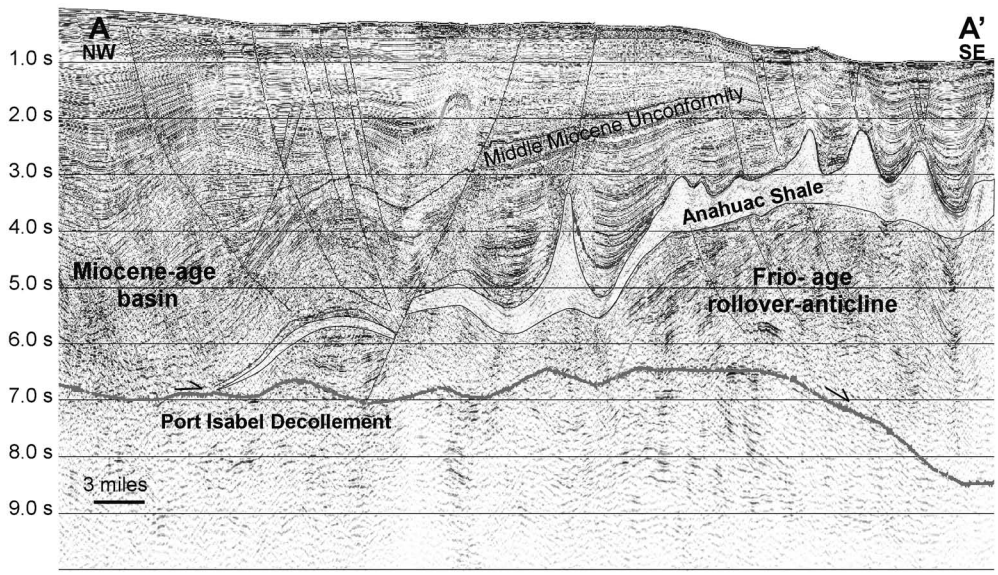
HGS General
Luncheon Meeting

by ***Rion H. Camerlo, David Meyer,*** *and* ***Robert E. Meltz***
ChevronTexaco

Shale Tectonics in the Northern Port Isabel Fold Belt Trend, Deepwater Gulf of Mexico

The Port Isabel fold belt lies in the southern and central Port Isabel protraction area in the westernmost deepwater Gulf of Mexico, offshore Texas. The northeast termination of the trend into the northeast corner of the Port Isabel and Southwest corner of the East Breaks protraction areas is a unique structural trend with a distinctive structural style. This northern extension of the Port Isabel fold belt is a structurally complex, linked fault system that has been significantly affected by regional salt tectonism and shallow shale diapirism. Large-scale capture of Miocene deposition updip of an Oligocene-age extensional zone, concurrent with evacuation of salt and ductile shale, has resulted in structural inversion and overprinting phases of deformation. The structural style of this zone is characterized by an updip trend of deep Miocene basins flanked by downdip large-scale rollover anticlines. Frio sediment-cored rollover anticlines are fringed on the downdip edges by thrusts, shale diapirs, or detachment folds. Inversion within this zone is expressed by faults with sense-of-motion reversal, rollover anticlines with basinward vergent thrusts, pop-up structures, and shearing of large portions of the section.

The ductility of the Anahuac shale at shallow depth is unique in that it is not caused by overpressure, as is assumed of most diapiric shales.



Line A-A' is a regional dip-oriented section across the northern Port Isabel fold belt trend. The shaded unit is the Anahuac Shale. Frio-age sediments lie below the Anahuac Shale and Miocene-age sediments lie above it. The line illustrates the regional structural elements in the trend. A large Miocene basin that is in contact with the regional detachment (the Port Isabel Decollement) is located on the northwest side of the line and a rollover-anticline of Frio age sediments is located on the southeast portion of the line. The Anahuac Shale above the large rollover-anticline is diapiric, forming several large shale diapirs.

Ductile shale deformation has increasing importance along trend from southwest to northeast. The Anahuac shale is an important detachment zone within the trend and it is diapiric over much of the northern Port Isabel fold belt trend. The unit is very well imaged because of its shallow position in the section and the high quality seismic data available over the area, and it thereby provides a rare opportunity to view the internal deformation of a ductile, diapiric shale. The shale displays many characteristics similar to the deformation style of salt, including mini-basin formation during early deposition, reactive diapirism of the shale layer triggered by regional

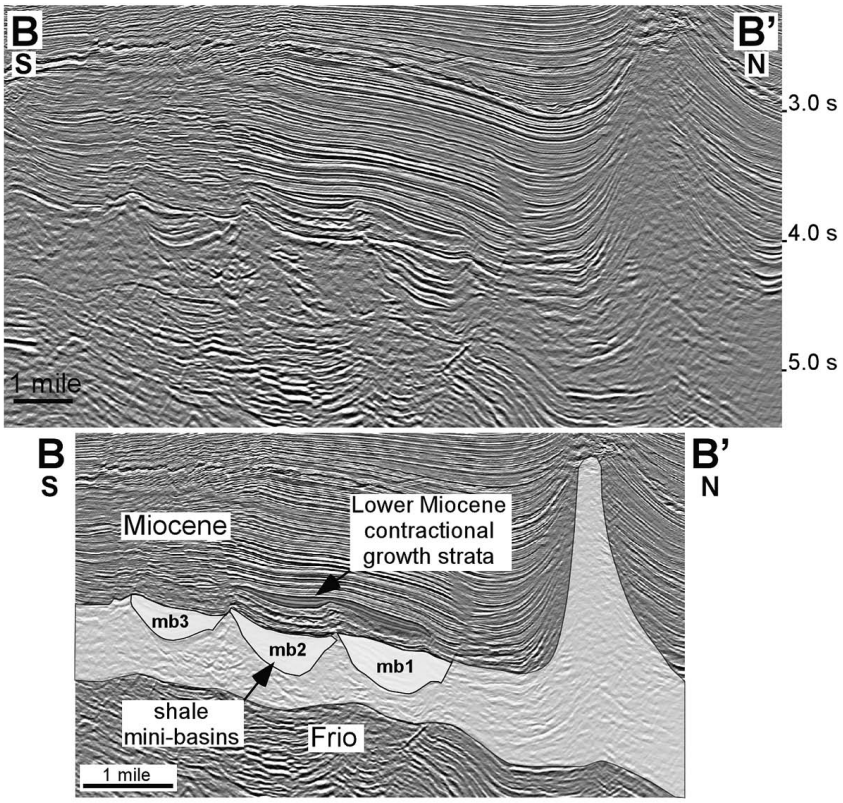
HGS General Luncheon

continued on page 59

HGS General Luncheon continued from page 57

extension, shale-cored detachment fold formation, and contractional diapirism, as well as more unique characteristics such as close juxtaposition of brittle and ductile behavior. The ductility of the Anahuac shale at shallow depth is unique in that it is not caused by overpressure, as is assumed of most diapiric shales.

The trend has economic hydrocarbon accumulations in traps created by the ductile Oligocene Anahuac shale. Future remaining exploratory plays will be to evaluate early Miocene turbidites in ponded basins immediately above the Anahuac, continued amplitude tests of the middle Miocene, and sub-Anahuac Frio structures. The Anahuac shale also has application as a uniquely shallow, and well imaged, structural analog for exploration targets in shale tectonic settings such as offshore Nigeria, Brunei, and the southern Caspian region. ■



The Anahuac Shale is ductile and diapiric within the trend. Unique structural features associated with salt tectonics are developed in the shale such as mini-basins and early contractional folding of the mini-basin rims (Line B-B').

Biographical Sketch

Rion H. Camerlo obtained his MS in geological sciences from The University of Texas at Austin in 1998. Upon graduation he joined Texaco as an explorationist in the western deepwater Gulf of Mexico region. Rion has participated in prospect maturation, lease sales in the Gulf of Mexico and West Africa and trend commercialization studies and has led geological field trips to the Sierra Madre Oriental in northern Mexico. He was involved with several significant discoveries in the Alaminos Canyon area and subsequently moved into ChevronTexaco's Deepwater Appraisal team. He is currently a geoscientist in ChevronTexaco's Deepwater Exploration/Projects business unit working on the development of the Blind Faith field.

Dave Meyer has 23 years of geological and geophysical experience exploring for oil and gas in the Gulf of Mexico basin, all with Chevron and ChevronTexaco. After receiving his M Sc Degree in geological oceanography from Florida Institute of Technology in 1981, he arrived in New Orleans to begin his career as a development geologist working the Eugene Island 360 and Bay Marchand Fields. Dave has spent most of his career as an explorationist working lease sales covering all areas of the GoM from offshore Texas to the Main Pass area of Louisiana with emphasis on developing new play concepts and adding prospects to the ChevronTexaco portfolio. For the last 10 years he has been a deepwater regional explorationist working primarily the Alaminos Canyon, Keathley Canyon and Walker Ridge areas.

Bob Meltz has 23 years of oil industry experience; originally with Texaco, and now with ChevronTexaco. He has an MSc in geology from Northern Illinois University. Over his career, Bob has worked exploration and asset development assignments in many portions of the Gulf of Mexico basin including the Miocene of south Louisiana, the Vicksburg of south Texas, the Wilcox of Alaminos Canyon and Walker Ridge, and many areas in between. He is currently working as a development geologist on ChevronTexaco's Typhoon field in north central Green Canyon.

Bob's interests are in salt tectonics, petroleum systems analysis, and continuing to find ways to avoid making the move from New Orleans to Houston.