LUNCHEON MEETING—SEPTEMBER 24, 1986

STEVEN R. BRUNHILD—Biographical Sketch

Steven R. Brunhild received his M.S. degree in Geology from Louisiana State University in September, 1983. While attending LSU, Mr. Brunhild studied South Louisiana stratigraphy for the Louisiana State Geological Survey. Previously, (1981), Mr. Brunhild graduated Magna Cum Laude with a B.S. in Geology from the University of Florida where he completed an Amoco sponsored Bachelor's Thesis on the Geology of Pistol Ridge and Maxie Fields, Southcentral Mississippi.

In October, 1983, Mr. Brunhild joined Pennzoil Producing Company as a production geologist in their Shreveport office. He is presently developing Pennzoil acreage in North Louisiana, South Arkansas and East Texas. Mr. Brunhild is also a member of the American Association of Petroleum Geologists and the Shreveport Geological Society.

DEPOSITIONAL AND STRUCTURAL SETTINGS IN SOUTHWESTERN LOUISIANA

Lithologic and paleontologic variations within the Oligo-Miocene strata of southwestern Louisiana suggest a time of highly fluctuating relative sea level, such that transgressive-regressive cycles occurred in three orders of magnitude. The second and third order cycles probably represent depocenter shifts and glacial eustatic sea level fluctuations, while the first order pattern reflects geotectonic and geosynclinal fill-compaction relationships.

Within this cyclic regime, migration of the massive sandstone facies, alternating sandstone and shale facies and massive shale facies of southwestern Louisiana, produce rather complex lateral facies relationships. To facilitate environmental reconstruction within this system, a new coefficient termed the facies index is introduced. The usefulness of this coefficient, expressed by the equation:

Facies Index = net sand/(number of sands × shale thickness)

is based on the concept that a more proximal location to a fluvio-deltaic depocenter is not only characterized by higher percentage sandstone but also by less sandstone-shale interbeddedness for a given percentage sandstone (resulting in a higher facies index).

By superimposing facies index maps on structure and isopach maps, contemporaneous structural and depositional frameworks are derived. More localized depositional and structural models, which are essential in establishing the hydrocarbon source and migration pattern as well as the reservoir characteristics and trapping mechanisms, can then be reconstructed as natural components of the regional system.

During the time of the **Heterostegina** and lower **Discorbis** zones of the Anahuac Formation (Oligocene), regressive east-west oriented delta front sands fluctuated (third order cycles) within an overall transgressive regime (second order). These deposits were then overlain by an extensive progradational fluvio-deltaic system which is represented by the upper **Discorbis** zone and lowermost Fleming Formation (Miocene). This regression was then interrupted by a large transgression which deposited a shale wedge that contained **Siphonina davisi** (intermediate neritic), **Planulina palmerae** and the upper bathyal Abbeville Assemblage (southern portion of study area). This transgression was followed by another regression and growth fault episode which prograded the shoreline to the southern extreme of the study area (Rockefeller Refuge of eastern Cameron Parish), where extremely thick lower Miocene sands were deposited within a structural embayment.