NOON MEETING—MARCH 28, 1979

CHARLES T. SIEMERS—Biographical Sketch

Dr. Charles T. Siemers was born in 1945. He received his undergraduate training at Oregon State University, receiving a B.S. degree in Geology in 1966. In 1968 he received a Masters degree from Indiana University, and received his Ph.D. in 1971 from the same college.

From 1971 to 1975, he was an Assistant Professor at the Geology Department of the University of New Mexico in Albuquerque, New Mexico. In 1975 he joined the Exploration and Production Research group for Cities Service Company. He is presently a Senior Research Geologist with Cities Service at their research facility in Tulsa, Oklahoma.

Dr. Siemers specialty is the study of modern and ancient depositional environments. He has over 20 publications dealing with sedimentology, sedimentary petrology, and paleoecology in addition to depositional environmental studies. He is a member of the AAPG, SEPM, GSA and several other local societies. He is presently Chairman of the Research Committee of the SEPM.

Dr. Siemers received the A. I. Levorsen Award at the 1978 GCAGS convention in New Orleans, for his paper on the Woodbine Formation.

SUBMARINE FAN DEPOSITION OF THE WOODBINE-EAGLE FORD INTERVAL (UPPER CRETACEOUS), TYLER, COUNTY, TEXAS (Abstract)

Production of gas and some condensate from fine-grained fractured sandstone of the Upper Cretaceous Woodbine-Eagle Ford interval at depths of 10,800 to 11,350 ft in central northern Tyler County has provided the impetus for a detailed paleoenvironmental analysis of the geology in that area. The productive area (Sugar Creek Field) is located a short distance south of the Sabine Uplift, which was an active positive area previous to, during and following Woodbine-Eagle Ford deposition, and is slightly down-dip from the Lower Cretaceous continental shelf edge as delineated by the Angelina-Caldwell flexure and the Edwards reef trend. The Woodbine-Eagle Ford interval (between the Buda Limestone below and Austin Chalk above) is 150-200 ft thick in the Sugar Creek Field area but thins to less than 50 ft thick above the Edwards reef build-up and northward toward the Sabine Uplift where it is missing. Southward (down-dip) the interval thickens to greater than 1500 ft within a distance of 15 miles.

The Woodbine-Eagle Ford interval in this down-dip position is a mud-dominated clastic wedge. Cores from seven wells in the Sugar Creek Field and two down-dip wells were examined in detail. Dark gray, organic-rich, silty shale with thin laminated to ripple-bedded siltstone beds and small siderite nodules comprise most (40% to greater than 80%) of the Woodbine-Eagle Ford interval and contain a microfauna (foraminifera) indicative of outer shelf to upper slope water depth. The reservoir sandstones occur as complex, single to multi-story bodies 15-40 ft thick and are composed of fine- to very fine-grained quartz arenites. As viewed in polished core slabs, the sandstones are mostly "massive-appearing" (without discernible sedimentary structures). Beds are characterized by very sharp (non-gradational) basal contacts (sandstone/shale) with abundant drag marks, flute casts and other sole markings, and by abrupt upper contacts with shale.

X-ray radiography of core slabs has revealed a multitude of sedimentary structures in the otherwise "massive-appearing" sandstones. Massive to laminated and cross-stratified sandstone is dominant but ripple-stratification, soft-sediment-deformation and scour features are also present. Burrows and bioturbation are common but confined only to the upper parts ot sandstone beds which may be separated by thin (1-2 inch) shale beds. These sedimentary features and their positions within well-defined sandstone genetic units indicate rapid deposition of sand by low- to high-concentration sumarine density (turbidity) currents and associated tractive currents. Mud deposition and burrowing of the upper parts of sand beds occurred during quiet periods between the sand pulses. Highly deformed siltstone intervals often are present below the sandstone bodies and indicate rapid loading by sand deposition and/or slumping on unstable slopes. A conglomerate submarine debris flow deposit is also well displayed in one core.

Subsurface correlation and mapping of the discontinuous, lenticular, sandstone bodies indicate that they are best delineated as a series of coalescing, dip-oriented lobes. Deposition appears most likely to have been as prograding submarine fan lobes, with sediment being channeled from up-dip delta and nearshore deposits across a narrow shelf and through shelf-edge breaks and then dumped down-slope. These basin-filling deposits prograded seaward until the sediment source was cut off and subsequent deposition of the Austin Chalk occurred. Although a major erosional unconformity exists above the Woodbine to the north, no such unconformity can be documented above the down-dip Woodbine-Eagle Ford interval in Tyler County.