MEETING

HGS DINNER MEETING—
DECEMBER 9, 1991
Social Period, 5:30 p.m.,
Dinner and Meeting, 6:30 p.m.
Post Oak Doubletree Inn

MARK L. BUTLER—Biographical Sketch

Mark L. Butler is presently a Research Associate with Amoco Production Research in Tulsa, Oklahoma. He is assigned to the Sequence Stratigraphic Research Group and is currently studying sequence stratigraphic and clastic depositional problems in the North Sea. The primary goal of these studies is the development of enhanced lithology prediction methodologies.

Prior to Mr. Butler's transfer to Amoco Production Research in 1989, he worked for several years in Amoco's Denver exploration office as a Sr. Staff Geologist with the California Exploration Group. Since 1977, he has been with several companies in the petroleum industy: UNOCAL as an Exploration Geologist, Hamilton Brothers Oil Co. as a Senior Geologist and Lear Petroleum as a Division Geologist. He received his B.S. (1975) and M.S. (1977) in geology from Ohio University.

The following two abstracts focus on different aspects of a single project. These papers were originally presented by Mark L. Butler and Greg A. Self at the 1991 AAPG Annual Convention in Dallas. For the purposes of this HGS meeting the two papers have been consolidated into a single presentation, and will be presented by Mark L. Butler.

LITHOLOGIC PREDICTION FROM THE STRATAL ARCHITECTURE OF PLIO-PLEISTOCENE GULF OF MEXICO: ARE THE EUSTATIC DEPOSITIONAL SYSTEMS TRACT MODELS ADEQUATE?

by M. L. Butler, G. A. Self, and R. W. Scott

Climatic/eustatic cycles of the Plio-Pleistocene have been defined in the northern Gulf of Mexico and precisely tied to their associated sequences and lithologies by means of graphic correlation. This framework has provided the data necessary for a detailed empirical evaluation of the eustatic depositional systems tract models. The key to this evaluation is a eustatic sea level curve derived from fossil and isotope data. A curve of this type has been defined for several sequences. Using this eustatic curve the actual lithofacies and position of the various systems tracts were directly compared to those predicted by the models.

The evaluation of the data with respect to eustatic sea level yielded conclusions that are significantly different from those predicted by the model. The most significant of these differences are: 1) significant amounts of sand were deposited in deep water during transgressive and highstand intervals, 2) the observed vertical succession of eustatic depositional systems tracts within a given sequence are transgressive, highstand and lowstand, 3) factors other than eustasy have been the dominant influence on facies distribution within the Plio-Pleistocene sequences studied.

These results demonstrate that depositional systems tracts and internal facies distribution could not be adequately described by a single model. Therefore, sequence stratigraphic analysis should be empirically based and conducted within the context of the basin, instead of being model-driven.