

BIOFACIES EXPRESSION OF DEPOSITIONAL SEQUENCES IN A LATE EOCENE - EARLY OLIGOCENE SUBTROPICAL SILICICLASTIC SETTING, A PRELIMINARY MODEL

ROOT*, S. A.; Fearn, L.B.; Rodgers, B.K.; Armentrout, J.A., Mobil Explor. & Prod. Technical Center, P.O. Box 650232, Dallas, TX 75265-0232, U.S.A.; DOCKERY, David T., III, Mississippi Office of Geology, P.O. Box 20307, Jackson, MS 39289-1307, U.S.A.

The biofacies expression of a high quality, core-based Paleogene (Hothouse) data set (eastern limb of the Mississippi embayment) is compared to a conceptual depositional model generalized from the literature. The literature based conceptual model for biofacies distribution within a sequence stratigraphic model predicts a uniform biotic response to eustatic sea level changes. As shown in this study, the model does not take into account the variation on the shelf from near shore to offshore. The most distal depositional packages identified in the study are most similar to the conceptual model. The biotic response (size and position of abundance curves) continues to diverge further from the conceptual model as these packages are traced into more proximal positions.

The Late Eocene sequence of the Young #1 core from Mississippi has three shelf depositional (TST-HST) couplets, each with a distinct biostratigraphic pattern. Paleoecologic control provided by benthic foraminifera and macrofossils along these three couplets are interpreted to represent a proximal, transitional and distal position along a shelf profile. The lowest, Gosport-Cockfield interval is considered the most proximal, with abundant terrigenous palynomacerals and minor foraminifera and nannofossils. The middle, Moody's Branch through Cocoa Sand interval is transitional, with consistent but varying abundances of benthic foraminifera, low but consistent nannofossils and an increase in the marine palynomacerals. The upper, Pachuta Marl-Shubuta Clay interval is the most distal part of this shelf environment. Planktic and benthic foraminifera are most abundant in the Pachuta and lower Shubuta. Calcareous nannofossils are most abundant just below the Pachuta-Shubuta contact and then slowly decrease upwards. Marine palynomacerals increase upwards through this interval, peaking in the Shubuta. The dinocysts are present cyclically through all three couplets. Their presence when combined with the general absence of foraminifera and nannofossils may indicate a proximal environment. Some groupings of the dinocysts and nannofossils at the generic level show additional promise for subdividing the shelf environment.