MIOCENE-OLIGOCENE BOUNDARY PROBLEMS IN THE GULF COAST

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ABSTRACT

The Oligocene Vicksburg marine beds, the Frio massive sands and shales, and the Anahuac shales and limes constitute one of the best known, yet controversial petroliferous sequences in the coastal Louisiana-Texas subsurface. The position of the Miocene-Oligocene boundary within this sequence has been the subject of many debates between Gulf Coast geologists. The problem originated when the middle Anahuac *Heterostegina* species were erroneously identified as *Heterostegina antillea* of the middle Oligocene on the Island of Antigua, British West Indies. The problem resulting from the assignment of the *Heterostegina* zone to the middle Oligocene on the basis of this species determination was further complicated by the application of the Texas surface term Frio to the sands and shales that occur between the Anahuac and Vicksburg. Later it was determined that the surface Frio of Texas was actually the equivalent of the subsurface Vicksburg; and that the so-called subsurface Frio was younger than previously believed.

Many proposals have been made as to the placement of the Miocene-Oligocene contact in the Louisiana and Texas subsurface, each at different stratigraphic level. The purpose of this paper is to establish the relationship of the subsurface "Cibicides" *hazzardi* zone of the upper Frio with the fossiliferous surface units to the east in Mississippi, Alabama, and Florida by means of Ostracoda; not to establish an indisputable Miocene-Oligocene boundary.

The Tampa limestone (basal Miocene, Florida Geological Survey) has been assigned to the Aquitanian stage of Europe and correlated with the Paynes Hammock sand of Alabama and Mississippi by the United States Geological Survey. A detailed study of the Ostracoda of the basal Tampa and Paynes Hammock formations shows that they carry the same ostracode fauna. A similar study of the Ostracoda of the "Cibicides" *hazzardi* zone in the Superior Oil Co., Duplantier No. 1 well, University field, East Baton Rouge Parish, Louisiana points to a correlation of this unit with the basal Tampa and Paynes Hammock formations. Whether the correlation of the Tampa with the Aquitanian is correct is beyond the scope of this study; however, if correct, this does not necessarily establish a definite Miocene age for the upper Frio since the Miocene-Oligocene boundary in Europe is still in dispute.

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