

Foraminifera in the Concord Limestone Member (Brasso Formation, Early Middle Miocene) of Trinidad, Western Tropical Atlantic Ocean: a Product of Sediment Starvation Near an Oxygen Minimum Zone

Brent Wilson¹ and Milshah Ramkissoon²

¹*Petroleum Geoscience Programme, Department of Chemical Engineering, University of the West Indies, St. Augustine, Trinidad and Tobago*

²*Coastal Dynamics Limited, 9 Stephens Road, Maraval, Port-of-Spain, Trinidad*

Abstract

The foraminifera in the laterally extensive, thin limestone members of the Brasso Formation of western Central Trinidad are little known. This paper examines those in the ~80 m thick Concord Limestone Member and bounding mudstones. Of forty-five samples collected, only thirteen yielded foraminifera. Total recovery was dominated by *Uvigerina subperegrina* gr. and *Cassidulina laevigata*, which indicated the section to be deposited along the upper margin of an oxygen minimum zone. Recovery of *Cibicidoides matazasensis* throughout indicates deposition at middle to outer neritic palaeodepths. This is corroborated by palaeodepths of ~43 – 207 m computed on the basis of the percentage of assemblages as planktonic foraminifera (but excluding low-oxygen stress indicators and allochthonous shoal-water species derived from a carbonate factory). A decline in the percentage abundance of *U. subperegrina* gr. through the section indicates that the flux of organic carbon to the site diminished over time. The mean palaeodepth for the Concord Limestone Member (99.3 m) did not differ significantly from that of the overlying mudstones (79.4 m), suggesting that the carbonate developed as a result of a period of sediment starvation unrelated to changes in palaeodepth. Sample spacing was too wide, however, to discern transgressive-regressive cycles in detail. The mean palaeodepth for the Concord Limestone member exceeded maximum palaeodepths of 55 m computed for the Mayo Limestone Member, which lacked specimens of the deeper water species recovered from the Concord Limestone. This suggests that a single palaeoenvironmental model cannot be applied to all limestone members within the Brasso Formation.