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Morphotype analysis of calcareous benthic foraminifera in the Carapita Formation, eastern Venezuela Basin

Dennis Sánchez

*PDVSA, Exploración, Gerencia de Laboratorios y Nucleotecas, Av. Igor Rodriguez, Edificio Principal, oficina 15, Puerto La Cruz, Estado Anzoátegui, Venezuela
Sanchezdk@pdvsa.com*

In northeastern Anzoátegui and monagas states the Carapita Formation is a transgressive marine shale unit of early to middle Miocene age. It forms a west-to-southwestward thinning wedge between a transgressive sandstone-shale unit below (Capaya Formation) and a regressive sandstone-shale unit above (Uchirito Formation).

The microfauna of the Carapita Formation in its type area is rich, and weathered samples normally yield a great diversity of calcareous foraminifera. The richest suites have been reported from clean, conchoidally fracturing, very dark colored shales devoid of the common clay - ironstone nodules and lenses. The presence of these iron-rich concretions apparently causes excessive oxidation of the microfauna, with the result that they are often very difficult to identify to the species level.

Data used in this study include seismic lines, foraminiferal, calcareous nannofossil and palynological samples, and well logs from 17 wells. Outcrop or core (conventional or sidewall) are the preferred sample types for micropaleontological examinations but, typically in this study, only cuttings samples were available. In a section of this type, caving during drilling and, thus, contamination of cuttings by overlying strata, is always a problem. Casing point locations were used by interpreters for evaluating the *in situ* nature of the fauna. Foraminiferal sample preparations followed standard techniques.

The morphotype data are based on species abundances. Species percentages were recalculated on the basis of the total calcareous specimens in each sample, each species was placed into a morphotype category, and finally the total percentage of each morphotype in each sample was determined.

The methods used in this study follow those outlined in Corliss & Chen (1988). Five morphotypes are defined in this work and include: convex, biconvex, elongate (uniserial/biserial), planospiral and trochospiral. The convex/biconvex and planospiral morphotypes generally show values < 50% for shallow depths (< 100 m), but gradually increase with increasing water depth. The elongate (uniserial/biserial) morphotype has values of generally > 40% in deep water (> 200 m), and finally the trochospiral morphotype is generally found with values < 10% in the whole study area and is rare or absent in deep water (> 200 m).