

High Impact Ecostratigraphic and Biostratigraphic Study of Amama-1 and Bara-1 Wells in Parts of Anambra Basin

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Abstract : The High Impact Ecostratigraphic And Biostratigraphic Study of parts of Anambra basin was carried out using samples from two exploration wells (Amama-1 and Bara-1), Amama-1 (219M-1829M) and Bara-1 (317M-1594M). Palynological and Paleontological analyses were carried out on 100 ditch cutting samples. The faunal and floral succession were of terrestrial and marine origin as described and logged. The well penetrated four stratigraphic units in Anambra Basin (the Nkporo, Mamu, Ajali and Nsukka) the wells yielded well preserved foraminifera and palynomorphs. The well yielded 53 species of foram and 69 species of palynomorphs, with 12 genera Bara-1 (25 Species of foram and 101 species of palynomorphs). Amama-1 permitted the recognition of 21 genera with 31 foraminiferal assemblage zones, 32 pollen and 37 spores assemblage zones, and dinoflagellate cyst, biozonation, ranging from late Campanian - early Paleocene. Bara-1 yielded (60 pollen, 41 spore assemblage zone and 18 dinoflagellate cyst). The zones, in stratigraphically ascending order for the foraminifera and palynomorphs are as follows. Amama Biozone A-Globotruncanella havanensis zone: Late Campanian -Maastrichtian (695 - 1829m) Biozone B-Morozovella velascoensis zone: Early Paleocene(165-695m) Bara-1 Biozone A-Globotruncanella havanensis zone: Late Campanian(1512m) Biozone B-Bolivina afra, B. explicata zone: Maastrichtian (634-1204m) Biozone C - Indeterminate (305 - 634m) palynomorphs Amama-1 A.Ctenolophonidites costatus zone:Early Maastrichtian (1829m) B-Retidiporites miniporatus Zone: Late Maastrichtian (1274m) Constructipollenites ineffectus Zone: Early Paleocene(695m) Bara-1 Droseridites senonicus Zone: Late Campanian (994- 1600m) B. Ctenolophonidites costatus Zone: Early Maastrichtian (713-994m) C. Retidiporites miniporatus Zone: Late Maastrichtian (305 -713m) The paleo - environment of deposition were determined to range from non-marine to outer neritic. A detailed categorization of the palynomorphs into terrestrially derived palynomorphs and marine derived palynomorphs based on the distribution of three broad vegetational types; mangrove, fresh water swamps and hinterland communities were used to evaluate sea level fluctuations with respect to sediments deposited in the basins and linked with a particular depositional system tract. Amama-1 recorded 4 maximum flooding surface(MFS) at depth 165-1829, dated b/w 61ma-76ma and three sequence boundary(SB) at depth 1048m - 1533m and 1581 dated b/w 634m - 1387m, dated 69.5ma - 82ma and four sequence boundary(SB) at 552m-876m, dated 68ma-77.5ma respectively. The application of ecostratigraphic description is characterised by the prominent expansion of the hinterland component consisting of the Mangrove to Lowland Rainforest and Afromontane - Savannah vegetation.

Keywords : foraminifera, palynomorphs. Campanian, Maastrichtian, Ecostratigraphic, Anambra

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