Sequence stratigraphy and reservoir studies of field 'X', onshore Niger Delta, Nigeria

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The study area has two recognized depositional sequences, bounded above and below by maximum flooding surfaces (MFS). The maximum flooding surfaces are Uvigerina 8, (9.5 ma) and Dodo shale (11.5 ma), and the two sequence boundaries are 10.35 ma and 10.6 ma. Nonion 4, MFS (10.4 ma) was missing in the section, which could have been as a result of 10.6 ma erosion as evidenced from the seismic section. Based on the above, system tracts were interpreted; Highstand system tract (HST), Lowstand system tract (LST) and Transgressive system tract (TST). The hydrocarbon bearing sand units were analyzed based on systems tracts. The LST had more hydrocarbon bearing sand units, followed by HST, while none was observed for the LST. The average porosity and permeability values for the system tracts are; for the HST, ϕ=38%, K=1202 mD, second HST, ϕ=36%, K=152 mD, LST ϕ=35%, K=37 mD and the last HST ϕ=33%, K=34 mD. The reservoirs are more of gas bearing than oil. This is attributed to the source rock type, temperature effect and low permeability values (reduced pore throat).

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