

Sequence Stratigraphy of Deepwater Turbidite System Offshore, Niger Delta, Nigeria

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The facies package was deposited during a lowstand system track. The geometry and truncation patterns of the submarine fan is shown on the interpreted seismic section. The stacking pattern is also shown on the well logs (Spontaneous Potential-SP and porosity). In this submarine fan system, unchanneled depositional lobes show a porosity profile that increases upward.

Three parasequences (PS) within the prograding depositional lobes are considered, low, middle and upper. Sequence stratigraphic principles were used to obtain relative sorting trend. Poor sorting decreases porosity and increases elastic moduli and seismic velocities. Lower PS is very poorly sorted, middle PS moderately sorted and the upper one well sorted. The porosity at the proximal position is calibrated with well data. The mean porosity computed from well logs in the upper, middle and lower is 25%, 22% and 20% respectively, corresponding to seismic velocities of 2520m/sec, 2550m/sec and 2590m/sec.

Rockphysics template was used to interpret the mineralogical properties quantitatively as a friable sand, which is compositionally immature with 70% clay. The textural maturity increases in the basin direction. Intercept and gradient crossplot also indicate variation in textural maturity from landward to basinward