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RESERVOIR MODELING USING SEISMIC ATTRIBUTES AND WELL LOG ANALYSIS OF "OAK" FIELD, NIGER DELTA, NIGERIA.

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Abstract:

This study examined the application of 3-D seismic and well log data for proper optimization and development of hydrocarbon potential in "OAK" field of Niger-Delta Province. For accurate reservoir modelling and property determination, five well logs and seismic data of 1480 to 1700 Xline and 5800 to 6200 Inline ranges were used to delineate two reservoirs of interest and to determine the average petrophysical properties of the two reservoirs. The average determined porosity with respect to reservoir A and B was 25% and 25.1%; permeability 1352md and 1328.23md; Net-To-Gross 80% and 89%; water saturation 32.8% and 32.7%; hydrocarbon saturation 67.2% and 67.3% and STOIIP was 136million STB and 128million STB respectively. This implies that the mapped reservoirs indicate hydrocarbon accumulation in large quantity. This study demonstrated the effectiveness of 3-D static modeling technique as a tool for better understanding of spatial distribution of discrete and continuous reservoir properties, hence, has provided a framework for future prediction of reservoir performance and production behavior of the reservoirs. However, appraisal wells should be drilled within the identified prospect areas to enhance optimization of the reservoir.