

HYDROCARBON RESERVOIR CHARACTERIZATION USING WELL LOG IN NIGER DELTA BASIN OF NIGERIA

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ABSTRACT

A study for the characterization of hydrocarbon reservoirs using well logs have been carried out in the Niger Delta in order to evaluate the field's hydrocarbon prospectivity, delineate hydrocarbon and water bearing zones and petrophysical properties of the hydrocarbon reservoirs of interest. Data from four composite well logs comprising of gamma ray, resistivity, neutron, density logs were used for the study. Gamma ray log was used for lithology differentiation, Resistivity log was used to identify form the response of resistivities of various zones. High resistivity signifies hydrocarbon bearing zone while low resistivity value indicates shaley zones. The combined density and neutron logs was used for the identification and differentiation of the various fluids in the sections. The results from the study showed that nine out of the twenty-two zones of interest (sand bodies) was delineated and correlated across for possible identification of hydrocarbon, and were identified as potential hydrocarbon reservoirs. Also the result indicates that there is an increase in porosity with an increase in permeability. The evaluated petrophysical parameter indicated that porosity ranges between (18-31%), water saturation (14-44%), hydrocarbon saturation (56-86%), permeability (138-10662)

KEYWORDS: Reservoir, Well Log, Petrophysical Properties