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RESERVOIR CHARACTERIZATION; A CASE STUDY OF WELLS IN NIGER DELTA, NIGERIA

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Abstract:

This research work is basically based on the use of Geophysical wire line log data of well X1 and well X2 in X- field, Niger Delta for the evaluation of the reservoir potential of the wells. The aims and objectivity of this research work is to use geophysical borehole log data to determine the reservoir of the various stages in the wells, correlate the wells in the field, determine the economically viability of the wells and to determine the different lithology encountered at various depth in the wells. The well X1 and well X2 are located at South-East of Brass and South West of Bonny. The reservoir potential of the well X1 is between depth 3533M and 3850M while the depth between 580M, the topmost of well X1 and 3850M, the deepest part of well X1. The depth between 2750m and 3340m are purely shales. Similarly, the reservoir potential of the well X2 is at depth between the range of 4057M and 4097M. The depth between 2205M and 2910M are intercalation of sand and shale while the depth 3000M to 3510M are purely shale because of high Gamma ray values from the logs. From the raw data collected from the Agip energy, reservoir characterization of the two wells was carried out by plotting depth values against resistivity values and depth against gamma ray. The plotting helped in the correlation of the two wells and determined the reservoir potentiality of the wells. Reservoir characterization deals with sedimentology, structural geology and petrophysical parameters of the wells formation. It also deals with the depositional environments and reservoir sand bodies that characterized the wells. This research work will identify the petroleum reservoirs that are capable of holding significant amount of petroleum in the wells, which will result from the consideration of porosity, hydrocarbon saturation and other petrophysical parameters.