

## **Petrophysical properties evaluation using well logging of the upper sand member of Zubair Formation in Zubair oil Field, Southern Iraq.**

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### **Abstract**

The present study aims to determine the petrophysical properties into the upper sandstone member of Zubair Formation at Zubair oil Field by using interpretation a number of different borehole logs for the open wells (Zb-40, Zb 84, Zb-114, Zb-212, Zb-233). These Properties include shale volume (Vsh), effective porosity ( $\emptyset_e$ ), water saturation ( $S_w$ ), permeability(K) and Pore throat type classification R35. The petrophysical properties (Vsh), ( $\emptyset_e$ ) and ( $S_w$ ) were drawn for each reservoir unit to determine the direction of the improvement of reservoir characteristics within the selected wells.

Depending on gamma- ray log Zubair Formation with in the Zubair oil Field was divided into reservoir units (AB, DJ, and LN) and non-reservoir units (C, and k). The well Zb-84 revealed increases in Vsh was in all the units of Zubair Formation, while the decrease in Vsh in well Zb-114 were obtained in unites AB, and LN. The average of the effective porosity in well Zb-233 in all units was high while low values were obtained in well Zb-84 in unit AB, and LN. There is an increase in water saturation in well Zb-40 in the unit AB while the low values were recorded in well Zb-84 in unite DJ. The petrophysical analysis shows improved porosity and hydrocarbon saturation towards the northern part from studied oil mainly in the well (Zb-40) and the petrophysical characteristics were in unit LN. The dominate type of Pore throat type was between macro - mega pore and meso – mega pore types.

**Key words: Well logs, petrophysical properties, Zubair Formation, Iraq.**