Application of petrophysical modelling of the eocene reservoirs in the Qadirpur area, central Indus Basin, Pakistan

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Abstract

The Eocene reservoirs of the Qadirpur field, Central Indus Basin are investigated petrophysically for their detailed reservoir characterization. The assorted petrophysical parameters determined include; true resistivity, shale volume, total porosity, effective porosity, density and neutron porosities, water and hydrocarbon saturation, bulk volume of water, lithology, gas effect, P-wave velocity and irreducible water saturation. The Eocene reservoirs are excellent with high effective porosity and hydrocarbon saturation, among these the Sui Upper Limestone in overall is a poor reservoir, though it has some hydrocarbon rich and much permeable intervals with a much better net-pay. The thickness of the reservoirs zones ranges from 20-130 m. These reservoirs are gas producing carbonates with almost irreducible water saturation and will produce water free hydrocarbons. The lower value of moveable hydrocarbon index shows that the hydrocarbons are moveable spontaneously to the well bore. The correlation model shows that the reservoirs have an inclined geometry and are a part of an anticlinal trap.