P15

The Distribution of Saturation Exponent and Cementation Factor in the Nubian Sandstone Formation, Sirt Basin, Libya Using Global Hydraulic Element App

N.I.A. Mousa* (Libyan Petroleum Institute) & P. Corbett (Heriot-Watt University)

SUMMARY

The main controls on hydraulic properties and hence the fluid (oil-water) distribution in the porous reservoir media is of major importance for reservoir description. The controls on porosity and permeability in the Lower Cretaceous (Nubian sandstone formation) of study area Sirt Basin, Libya are considered in this study. The primary depositional texture, quartz overgrowth and clay minerals are shown to be the key control to the hydraulic properties. Primary depositional texture results in existence of distinct rock types with similar pore throat attributes described using Global Hydraulic Elements (GHE's) approach.

The main objective of this study is to use the Global Hydraulic Elements approach to estimating the distribution of saturation exponent, cementation factor and to distinguish the saturation exponent and cementation factor between the GHE's in the Lower Cretaceous of study area. Amaefule et al, 1993 introduced the first rock typing approach which was strongly dependent on core plug data sets and was successful in determining different systems in a single data set. But this method has a major limitation when applied many data sets. This limitation has been overcome by the new concept of "petrotyping" (using Global Hydraulic Elements) which was developed by (Corbett et al, 2003; Kooistra, 2004). Six samples plugs have been selected from different Global Hydraulic Elements to determine saturation exponent and cementation factor using Porous Plate method.

The estimation of hydrocarbon reserve is dependent of electric logs data and the saturation exponent, cementation factor has either assumed or used on average value of the whole of reservoir the reason of this that the petrophysicist does not usually have a more detailed description of reservoir.