



Regional Level Interpretation Model for Petro-physical Evaluation of Mid-Eocene Complex Lithology, Low Resistivity, Shaly/ Silty Sandstone Reservoirs of North Cambay Basin, India.

Pradeep Kumar, RBN Singh, Shalini, BS Bisht*

Oil and Natural Gas Corporation Limited, INTEG, 4th Floor GEOPIC, Dehradun-248195, Uttarakhand

Presenting author, E-mail: pk_randev@yahoo.co.in*

Keywords

Petro-physical Evaluation, Complex Lithology, Low Resistivity, Shaly/ Silty Sandstone Reservoirs, heavy minerals

Summary

Kalol sandstone reservoirs of mid-Eocene are the major hydrocarbon producers in Ahmedabad–Mehsana block of north Cambay basin. These reservoirs generally are silty/shaly fine grained sandstones containing varying amount of heavy Fe/Ti bearing minerals (ilmenite, siderite, limonite) and non-clay radioactive minerals (Allanite/monazite). Log data processing and interpretation with simple sand shale models becomes very difficult for these fine grained, silty, complex lithology/ low resistivity reservoirs.

In the present study a comprehensive interpretation model for petrophysical evaluation of these sand has been developed and applied successfully in almost all the eleven sands of Kalol, Nandej, Ahmedabad, Wasna, Vadtal and Nadiad fields of North Cambay basin. This regional interpretation model is based upon detailed laboratory studies on core samples and integration of high tech logs with conventional log data for mineral model selection and determination of processing parameters.

The results after validation with petrophysical core studies and production data lead to identification of additional hydrocarbon layers, improving computed oil saturation, and better geo-cellular modelling for optimum exploitation of hydrocarbon reserves.