Hydrocarbon potentialities of some upper cretaceous roks at gpt oil field ,abo sennan concession area ,north western desart, egypt

Emad Ibrahim Mohmed Madian

This study is devoted to evaluate some rock units (Khoman, Abu Roash and Bahariya formations), of GPT oil field in Abu Sennan concession area, Northern Western Desert. This was carried out through studying the petrophysical parameters, source rock evaluation, as well as some seismic characteristics of studied formations in eight wells (GPT-1, GPT-2, GPT-5, GPT-9, GPT-10, GPT-14, GPT-17 and GPT-21).The available logging data used are, the porosity tools (sonic, density and neutron logs), the Vsh tool (Gamma Ray log), the resistivity tools (shallow and deep devices) and velocity logs. In addition, a number of seismic lines (fourteen lines) are also used.The available log data were used to evaluate the different petrophysical parameters of the selected formations, such as total and effective porosities (Φt and Φe), volume of shale (Vsh), water saturation (Sw) and hydrocarbon saturation (Sh).Moreover, the thickness variations, lithofacies analyses and the depositional environments of the Khoman, Abu Roash and Bahairya formations are interpreted by using isopach and lithofacies maps as well as a number of two dimensional crossplots.The coordination between the evaluated petrophysical parameters and subsurface geological conditions were used to show the vertical and horizontal distributions of oil in the studied rock units. The vertical distribution (zone-wise) is presented and explained through litho-saturation crossplots, while the horizontal distribution (formation-wise) is studiedAbstractXXXIthrough different types of maps, including total and effective porosity, water saturation and hydrocarbon saturation distribution maps.Also, the source rock potentials and the quantities of the organic carbon and organic matter present in the studied rock units are determined to define the petroleum resources. Transformation cycles and trapping style takes place as a measure to the final oil and gas occurrences encountered in the studied units.The second target is to analyze the velocity function. However, the sonic logs are used for the -determination of the average and interval velocities in the form of a number of two dimensional plots and gradient maps of the different rock units starting from the Bahariya Formation to the Dabaa Formation. Moreover, the drift curves were constructed and the reflectivity of the encountered boundaries between rock units in terms of reflectivity logs were drawn.On the other hand, the structural features in the studied area were determined using the available seismic sections. A number of isochronous maps (two way time maps) are drawn for the tops of Khoman, Abu

Roash and Bahariya formations and geo-seismic cross sections were constructed. Folds (anticlines and synclines) and faults (dip-slip) are identified on these maps both individually and in groups giving rise to step-like belts as well as graben and horest belts.