

Evaluation the Hydrocarbon Sources Potential of Source Rock in the Ghadames Basin

Authors : Ibrahim Mohamed Omran

Abstract : One of the most important potential source rock intervals for the oils in the Ghadames Basin is the Tanezzuft shale. The Tanezzuft shale is very mature with respect to high oil generation. The aim of this project is to estimate the total yield of the source rocks in the Ghadames Basin, which is represented by the Tanezzuft Formation (oil shale interbedded with sandstone). To evaluate the source rock in the Ghadames Basin, we take one of the wells, which is G1-NC2; this well was chosen to give an initial idea about the status of the Tanezzuft source rock in the Ghadames Basin, and the Rock-Eval 6 device was used for this study. This study will use molecular geochemical techniques to compare 35 samples obtained from boreholes during drill well G1-NC2 in the Ghadames basin and compare the result with GC result. The comparison showed the following, the TOC has fair hydrocarbon source rock potential where immature in the upper zone, but the lower zone has adequate organic carbon to generate hydrocarbon, and the source potential of kerogen has Type II, III oil porn. The GC result indicates that the origin of the oil is richer in lipids or algae than phytane chlorophyll or terrestrial matter for kerogen Type II and III, and the condition here is suboxic. The ratios of Pr/Ph are close together as well nC17/Pr, nC18/Ph, the origin of oil is rich in lipid or algae than phytol chlorophyll or terrestrial that for kerogen Type II and the condition here is suboxic. It is noticeable when using the Talukdar graph for all the selected crude oil samples take position of kerogen type II and III and transition zone between oxidizing and reducing, and the source of oil is mixed between algal and marine. This implies that the migration path was vertical rather than horizontal, so the oil comes from the source rocks in the same well G1-NC2.

Keywords : kerogen type, maturation, generation, migration

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