4.2 EXHIBITION SIMILARITIES AND DISPARITIES UPPER CRETACEOUS SOURCE ROCKS FROM SOUTHEASTERN ANATOLIA FROM LITHOLOGICAL CONTENT PERSPECTIVE

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ABSTRACT

As it can be examined from literature, The Arabian Plate consists of various proven and prolific hydrocarbon systems that have wide ranges of age, lithology, productivity, maturity, and areal extent. The Southeastern Anatolia Basin which constitutes the northern edge of the Arabian Plate contains at least three different active petroleum plays: Paleozoic, Jurassic and Upper Cretaceous. The Upper Cretaceous play has also its branches in at least three different carbonate source rock intervals. Although these source rocks deposited in a consecutive order at similar paleogeographic and paleoclimatic conditions, their effectiveness as a source rock can vary according to their lithological contents. In this study, we used basin analysis and petroleum system modeling principles in order to perform a substantive compare and contrast of their source rock potentials. Basically, we prepared 1D models which encapsulate all distinctive characteristics of three Upper Cretaceous source rock intervals and we applied same source rock kinetics, similar thicknesses, mechanical compactions, and other petrophysical properties. We changed carbonate amount, type and content in the rock percentage of these source rocks while most of other lithologic characteristics kept constant. This peculiar feature of different source rocks directly affected the timing or amount of generated and expulsed of hydrocarbons and it can be utilized as an effectiveness parameter of source rocks especially in terms of critical timing of the aforementioned petroleum system.

KEYWORDS: Basin modeling, Upper Cretaceous Source Rocks of Southeastern Anatolian Basin, Source Rock Analysis, Carbonate Source Rocks