



## INTERPRETATION OF HYDROCARBON GENERATION, MIGRATION AND THERMAL HISTORY OF MESOPOTAMIAN BASIN SOUTHERN IRAQ BASED 1D PETROMOD SOFTWARE

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### ABSTRACT

*Seven oilfields are selected in the Mesopotamian basin, southern Iraq for studying thermal history, hydrocarbon generation and migration these are Siba, Zubair, Nahr Umr, Majnoon, Halfaya, Amara and Kumait. The thermal and the basin histories of the basin are modeled using the PetroMod software. Modeling results proved that the generation of oil begins at the end of the Cretaceous and early of Tertiary as a response to the increase of the temperature and burial depth of the Sulaiy and Yamama formations which are in turn accelerate the maturation of organic matter. Therefore, these formations act as main source rocks in the considered basin. The rest of the formations enter the maturation level during Miocene but they aren't capable to generate oil. The migration of oil in both horizontal and vertical directions begins at Miocene in western and southwestern parts of the basin that reflect the significant accumulation of oil in these parts.*

Keywords: Thermal history; Generation; Migration; Mesopotamian basin

### INTRODUCTION

The oilfields used in this study include Siba, Zubair, Nahr Umr, Majnoon, Halfaya, Kumait, and Amara (Fig. 1). They are located in the southern part of Iraq between 30°58' – 32°08' latitude) and (46°52' – 47°56' longitude) within the Mesopotamian basin. The basin is covered by Quaternary fluvial-plain deposits of the Tigris and Euphrates rivers. Beneath this cover, anticlines and horst lie and are mainly related to long lived paleostructures. In the Basrah area in the extreme south of the basin, these structures may also relate to the movement of Infra-Cambrian Hormuz salt (Jassim and Buday, 2006c). The zone was uplifted