

International Conference and Expo on **Oil and Gas**

November 16-18, 2015 Dubai, UAE

Saturation modeling in a carbonate reservoir Ashtart (Gabes Golf-Tunisia) using capillary pressure based saturation height function

Fatma Taktak^{1,2}

¹University of Modern Sciences, UAE

²Ecole Nationale d'Ingénieurs de Sfax, Tunisia

Because of the complexity of the pore network and the high heterogeneity of Ashtart carbonate reservoir in the Gulf of Gabes, a study was required for a precise knowledge of the main reservoir parameters including porosity, permeability and irreducible water saturation. The main objective is to present a global petrophysic architecture model of the El Garia Formation reservoir for the Gulf of Gabes basin (GGB) during the Eocene period, using a detailed interpretation of the petrofacies texture, geometry and petrophysical parameters of which were apprehended using seismic profiles, gamma-ray and sonic lateral logs as well as cores and cuttings taken in drill wells. Estimation of the initial water saturation and hence variations in the capillary pressure in the reservoir, required compilations of porosity data measured on cores, supplemented by additional but computed porosities based on acoustic log diagrams. Furthermore, gamma ray, sonic log and well to well correlations tied to core results and well cuttings, help recognize the layered lithologies within the El Garia flat lying but stratified, Ypresian in origin reservoir rocks. Abundant permeability and porosity values compiled in the light of seismic sequence and gamma ray and sonic log details were integrated in an empirical approach using the Leverett J function, to model the irreducible water saturation depending on the capillary pressure distribution in the whole reservoir. We suggest that diagenesis prevalently controls porosity, due to operative dissolutions of the nummulitid tests/bioclots and cementation; moreover, diagenesis exerts effects on permeability by interconnecting intergranular and intratest pore spaces. In contrast, microfracturing enhances permeability of the reservoir. This is notably the case in the fairly permeable central zone in the Ashtart reservoir with excellent petrophysical parameters but which were found to degrade gradually towards its peripheries.

Biography

Fatma Taktak, PhD in Geological Sciences, Faculty of Sciences, Sfax University, Tunisia. She has 13 years of experience in the oil and gas exploration and is an expert in the analysis of well logging data and developing new well logging techniques, wellbore stability while drilling and basins modelling using 2D seismic technics in different oil companies in Tunisia. She has many research papers in ISI well known geological journals. Now, she is working as an Assistant Professor at University of Modern Sciences (UMS), College of Business, Dubai, United Arab Emirates and responsible for the Masters of Science Program in Petroleum Operations Management.

fatimtak@yahoo.fr

Notes: