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Well data analysis to assist for a new opportunity in unconventional and conventional exploration, Sirt Basin, Libya

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During the hydrocarbon exploration activities, many challenges are faced in the ideal and accurate assessment of the oil reservoirs. Recently, there has been a practical revolution in estimating the reserves of unconventional reservoirs that were formerly useless. So far, there is no consensus on the exact definition of unconventional reservoirs in the Libyan oil industry, where the hydrocarbon is being produced from conventional reservoirs for ages. This study aims to help for better understanding and to clarify the confusion about the unconventional reservoirs, as well as analyze new opportunities to find new sources of energy and reserves in upper cretaceous (Santonian - Campanian) Tagrifet carbonate deposits across Waha block in the Hameimat Trough which is still virgin to explore for hydrocarbon, with no production tests ever made to recover from this section in the study area, it seems encouraging for further investigation and explore what behind this rocks. An integrated approach was used to evaluate the interesting zones using conventional and unconventional techniques to understand the key elements for the reservoir (Vsh, Sw, Phi and TOC) conducted on a variety of data including conventional well logs and wellbore data (gas surveys). Significant increasing in mud gas reading was observed in the wellbore gas surveys, in addition, oil shows are recognized using UV light indicate of oil staining and fluorescence, also stream-cut and crush-cut were examined. The reservoir characterized by the variation in reservoir property, the average porosity exceeds 10%, also the hydrocarbon saturation generally overrun the average of 50%. Notable correlation between the petrophysical results and the hydrocarbon show and downhole gas survey which further confirm the output of this study with good reservoir characteristics suitable for conventional and unconventional reservoirs.

Biography

Nabil Elhwezel is the Member of G&G section in Exploration department, Waha Oil Company (Libya) with experience for more than 7 years in oil industry. He has completed a Master Degree in Earth Science (2018) from The Libyan Academy, Janzur, Tripoli-Libya and a Bachelor Degree in Geological Engineering (Petrophysics) (2009) from Tripoli University Tripoli-Libya. He has worked as a subsurface geologist for Waha blocks such as C71, C71a, NC98 and 59. He has interests in reservoir characterization and facies as related to depositional environment and tectonics for both clastic and carbonate.

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