

Petrophysical Interpretation of Levant Basin Reservoirs

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Abstract:

2D and 3D seismic surveys have been acquired offshore Lebanon to describe the geology and geometry of underlying reservoirs. However, seismic data is not sufficient to quantitatively describe hydrocarbon reservoirs. Therefore, drilling the first exploration well will be a major step towards the characterization of Lebanon's gas reservoirs with reduced bias and uncertainty.

Logs and core data acquired from the exploration well will provide valuable information about the reservoir extension and potential; this well should be completed by 2019. The objective of this proposal is to develop a formation evaluation strategy in the Levant basin using the available well log and core data.

First, we will perform an extensive literature review of the current wells drilled in the Levant basin. We will collect well logs and core data of producing wells in Lebanon's neighboring countries, and summarize the petrophysical interpretation methods used by oil and gas companies to quantify formation properties (i.e., porosity, saturation, permeability, mineralogy). The literature review will highlight the problems, difficulties, and challenges of formation characterization and hydrocarbon production in the Levant basin. Then, we will use well log data from the Levant Basin to develop a petrophysical interpretation workflow at the American University of Beirut (AUB). The interpretation will be performed on Techlog (Schlumberger software) and MATLAB. The formation evaluation workflow will be applied to the wells offshore Lebanon to characterize the hydrocarbon reservoirs and estimate petrophysical properties.

This proposal is the first phase of a long-term project to enhance reservoir characterization and petrophysical interpretation methods of hydrocarbon formations in the Middle East and North Africa (MENA) region.