An Integrated Study that Opened New Opportunities

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Tinat field has a reservoir of very porous eolian sand with an average porosity of about 17%. This sand is called Unayzah-A. Most of the wells penetrated this porous sand found gas and condensate with high rates. These high rates of gas and condensate make this field very attractive. However, with the water encountered in the same reservoir in two later wells, a question is raised about the size of the field. The question that we need to answer is, does the water in the two wet wells represents the free water level of the field. A multi-disciplinary team was formed to evaluate the reservoir and to acquire a better understanding of Tinat Field. Seismic, petrophysics, petrography, engineering data, geochemistry, stratigraphy, and structural studies were conducted and results from those studies were integrated. The results of this integration clearly showed the existence of exploration and delineation potential in Tinat field despite of the two later well results which found water at a higher level than the base of gas in other wells. Forward modeling provided a tool to map fluid type within the reservoir. Gas versus water was reflected by high and low amplitudes respectively. This attribute was used to map potential areas for future exploration and delineation.