

Play Based Exploration of Triassic Formations in Kuwait

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Abstract

The Triassic and Paleozoic strata are emerging exploratory targets for free gas and condensates in Kuwait. The Minjur, Jilh and Sudair formations, represent Triassic section in Kuwait. The exploration of these formations is constrained by in-sufficient drilled information and seismic imaging quality. Play fairway assessment of these reservoirs provides regional overview of geology and hydrocarbon potential of these sequences. A regional synthesis of sub-surface data has defined distinct plays within Triassic and demarcated priority segments. A total of four plays, bounded by prominent top and base seals, exist within Triassic section. These, in descending order of chronology, are Sudair, Lower Jilh, Middle Minjur - Upper Jilh and Upper Minjur plays. The proven plays are the Lower Jilh and Middle Minjur-Upper Jilh. The Lower Jilh is the most promising plays with high historical well success rate. Unexplored areas of western Kuwait are attractive targets for the play. The Middle Minjur - Upper Jilh play appears to be promising in In Greater Burgan - Minagish corridor. The other two plays namely Sudair and Upper Minjur remain unproven. Access to hydrocarbon charge and to a lesser extent reservoir are the major risk element of the plays. The plays are present over the entire country and are characterized by a highly variable play chance, prospect success rate and historical well success rate as well as total play chance. In view of this, play segmentation and prioritization and its spatial balancing with prospects assumes significance for identification of thrust areas for future exploration and formulation of exploration strategy. It is recommended to focus the future exploratory efforts in high priority play segments, especially western Kuwait and Burgan-Minagish corridors. Also drilling of parametric wells in West Kuwait Sub-Region and eastern flank of Kuwait arch; and improving the image quality of seismic data are required to reduce the uncertainty and minimize the exploration risk.