
Exploration Risk Reduction by Accurate Delineation of Channel Sand Bodies of Lower Zubair Formation in Northwest Raudhatain Area of Kuwait Using Post-Stack Seismic Attributes

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The Lower Cretaceous Zubair Formation is broadly divided into lower, middle and upper units. The middle unit is the main producer of hydrocarbons in northern part of Kuwait circumscribed by Sabriya-Raudhatain-Abdali-Ratqa oil fields. In NW Raudhatain, which lies outside the Cretaceous four way closure of Raudhatain Field, three wells were drilled primarily to explore deeper pre-Cretaceous formations. From the electric logs only Lower Zubair section was interpreted to contain hydrocarbons in these wells. The pay containing sand bodies were deposited in tidally influenced channels within the estuarine environments.

The major challenge for exploration lies in accurately identifying and delineating these channel filled sand bodies. Due to very little drill data, channel facies were difficult to map accurately to delineate prospective areas for exploration. Consequently, various types of post stack seismic attributes were used for identification and mapping of these channels to reduce the exploration risk.

The study area is covered by 3D seismic data but due to the poor data quality it was not possible to map the channels sand bodies within Lower Zubair section in traditional way. To overcome this difficulty a new methodology was devised to accurately identify and map these channel sand bodies using horizon slices and various post stack seismic attribute maps. This paper discusses a new seismic interpretation technique which will be useful in accurately mapping stratigraphic features which is otherwise not possible by conventional methods.
