

## **Reservoir Quality Prediction from Image-based Sedimentary Structures, Punjab Platform, Pakistan.**

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The Punjab platform represents an important sedimentary basin for hydrocarbon exploration in Pakistan. This paper focuses on the prediction of Mesozoic clastic reservoir quality in the Rachna Block based on the presence of sedimentary features from electrical images and openhole logs. Image data from three wells (Alisahib-1, Amirwali-1 and Bahu-1) has been used to locate cross beds, laminations, bioturbation, soft-sediment deformation and scour surfaces. Based on sedimentary features, sand-body orientation was derived for channel sands. Subsequently, openhole logs were combined with high-resolution image logs for lithotypes and depositional facies analyses with neural network-techniques using GeoFrame.

It was observed that producing sand body in Bahu-1 was characterized by upper shore face cross-bedded sandstone. In Amirwali-1, reservoir quality of the same sand body was deteriorated due to bioturbation, thin shale layers, and mud clasts. In Alisahib-1, located further south of the former wells, sand body was both argillaceous and bioturbated, it seems to be deposited in distal part of the system. The correlation based on openhole and image log analyses indicates that the producing sand in the two wells Bahu-1 and Amirwali-1 were located in the same depositional setting with dominance of upper shoreface facies environment as compared to Alisahib-1, where the sand was abundantly bioturbated with deposition in the lower shoreface environment. The results obtained through this analysis provide an example of reservoir characterization from image logs and correlation for basin modeling in absence of continuous core.