

APPLICATION OF IMAGE LOGS IN HIGH-RESOLUTION SEQUENCE STRATIGRAPHY AND FACIES ANALYSIS, ZAUR FIELD, PAKISTAN

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The Zaur Field has been extensively drilled in recent years. All wells have open hole wireline logs, but only two wells have limited cores. It is very challenging for geologists to fully evaluate geological complexity without cores. However, there are five wells with FMI images in this field. The main objective of this multiwell FMI study is to fully utilize the existing FMI images integrated with open hole logs and existing core data to: (a) identify sedimentary features, such as, bed boundary, cross bedding, flooding surface, scour surface, storm surface, unconformities and bioturbation, so that these information can be used for sequence stratigraphic studies; (b) translate these features into sedimentary facies and to interpret the depositional environment. These interpretations are critical to the development of a reservoir zonation and model.

Multi-well FMI studies show that many sedimentary structures can be directly observed from FMI images and assist in correlation. A conceptual sedimentary model has been proposed for the Lower Goru Formation in the Zaur Field, and five distinctive sedimentary facies have been defined. The deposition of the A and B Sands are very similar in Zaur Field. Deposition of both was initiated during periods of relative high sea level following a major flooding event. A highstand systems tract, (progradational unit) was developed at the initiation of both the A and B Sands. The sequence stratigraphic comparison shows very strong correlation, even in parasequences scale, characterised by an overall coarsening upward succession. The upper parts of both the A Sand and the B Sand show a fining upwards profile and are interpreted to represent deposits of the transgressive systems tract (TST).