Fault Modeling and 2D Seismic Interpretation of Tajjal /Kadanwari Area Integrated with AVO/AVA Modeling

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Abstract

Seismic Interpretation of Tajjal/Kadanwari Area was carried out by using the Forward Modeling to evaluate the potential leads and prospects in the study area. A fault model was prepared to confirm the negative flower structure because structurally the area lies in extensional regime, where horst and graben structure were responsible for creating negative flower structure. Well log Data of Kadanwari-01 (K-01), Kadanwari-04 (K-04) and Kadanwari-11 (K-11) was used for creating the Amplitude versus Offset - Amplitude versus Angle (AVO/AVA) Model. Moreover the attribute analysis was performed on available seismic data to enhance the subsurface structural deformation in the study area.

After estimating the rock physics parameters such as Poisson's Ratio curve and shear sonic curve for each well AVO/AVA synthetics were prepared to study the effect of trace offset on reflection amplitude. Amplitude anomalies are quite obvious from the AVO Synthetic of K-01 and K-04 well. AVA Synthetics made from K-04 and K-11 was used to clearly indicate the phase reversal at reservoir Level. Amplitude anomalies and phase reversal were giving the hint of Direct Hydrocarbon Indicator (DHI).

Instantaneous Frequency Attribute and its mapping were used to identify the sand rich bedding by indicating low frequency anomaly. Discontinuities observed by Instantaneous Phase Attribute were supporting the negative flower structure in the area.