2D seismic interpretatioin using reflection method for hydrocarbon evaluation of Tajal Area, Sindh

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Abstract

The research work pertains to investigate the 2D seismic interpretation for Hydrocarbons evaluation using reflection technique, as seismic reflection is quite result oriented method to explore hydrocarbon potential. To carry out this exercise, seismic reflection data, which consists of line TJ-90 of Tajal area situated in Lower Indus Basin is taken. The data passed through a desirable processing sequence and finally a time section was prepared. The reflectors were marked as R1, R2, R3, R4 and R5, and after correlation with stratigraphic sequence encountered in Kadanwari Well 08, these were named as Lakhi, Ranikot, Upper Guru, Lower Guru and Chiltan formation.

Chiltan Formation is main reservoir and productive in the area. Study area is mainly characterized as extensional regime (normal faulting). Faults were also marked to examine the subsurface structure. Due to the extensional regime horst and graben geometries are present in the area, favorable for the accumulation of hydrocarbons. The subsurface picture of the area shows the smooth trend of strata dipping gently from east to west direction, thinning of strata is going to take place from east to west. Time and Depth contour maps are also prepared at a particular level to analyze the variations on the basis of time and depth. Iso Velocity maps were prepared to determine the variations of velocity.

Using well data of Kadanwari Well 08, Synthetic seismogram was generated and then correlated with the depth section, which further confirmed initial interpretation. In addition to this the rock properties are also calculated using this data; special concentration was on the porosity of the rocks which further confirmed the reservoir potential of Chiltan formation.