2D SEISMIC DATA INTERPRETATION OF MEYAL AREA USING SYNTHETIC SEISMOGRAM, ATTRIBUTE AND RESERVOIR ANALYSIS WITH THE OBJECTIVE OF FINDING NEW PROSPECT IN THE AREA

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ABSTRACT

The Meyal Concession in Potwar Plateau Upper Indus Basin Pakistan is a big producer of hydrocarbons. In the present study the most important purpose is to delineate subsurface geology by seismic data interpretation, attribute analysis and to evaluate the potential reservoir formations by petrophysical analysis. The data set includes six 2D seismic lines and a suite of wireline logs of Meyal-1 and 17. Seismic data analysis comprises identification, marking of reflectors and naming them according to the depths after correlation with the well tops and VSP data. Interpretation of seismic lines shows pop-up structure bounded by two thrust faults dipping in the NS to EW. Thrusting shows the impact of compressional forces. Chorgali Formation, Sakesar Limestone and Datta Formation have been acting as the reservoir in the area. The petrophysical parameters estimated effective porosity, hydrocarbon saturation, reservoir thickness (pay zone) and volume of shale used to characterize the reservoir's potential of the area. Good reservoir potential found in well Meyal-17 for Chorgali Formation is average Vshl 32.8%, effective porosity 12.7% and HC saturation 45.2%. For Sakesar Limestone the Vshl amounts to 27.71%, effective porosity 9.4% and HC saturation 56.4%. For Datta Sandstone the Vshl is 19.7%, effective porosity 8.6% and HC saturation 49.4%. Attribute analysis improved geologic visualization and shows well Meyal-17 has the presence of hydrocarbon because of low frequency and low amplitude values. On the basis of seismic data interpretation, petrophysical and attribute analyses, new prospect well has been proposed on a 2D seismic line 97-MYL-08 along the shot point 175 with latitude 33° 16' 1″ and longitude 72° 9' 15″.

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