2D SEISMIC INTERPRETATION AND PETROPHYSICAL ANALYSIS OF RAJIAN AREA, UPPER INDUS BASIN, PAKISTAN

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ABSTRACT

The study area for this thesis is Missa Kaswal, Gujar Khan, Punjab.The coordinates of the area are 32^0 N to 34^0 N latitude and 70^0 E to 74^0 E longitude. This area lies in Rawalpindi district, so the climate is similar to Rawalpindi. Oil wells are drilled in Rajian and these wells are at production stage. Rajian is about 80 kilometers south of Islamabad, capital of Pakistan. It lies in the Potwar plateau that is present in Potwar sub-Indus Basin.In this course, we were given five seismic lines of Missa Kaswal; one is strike line and other four are dip lines, and the strike line is also cutting all the four dip lines through the center. One well log data of Rajian 01 also provided. As the well is drilled on the strike line, we have the advantage that the strike line is also the control line and we can easily correlate the data.Rajian is tectonically very compressed area as it is present between Main Boundary Thrust and Salt Range Thrust Fault. It is also surrounded by Kalabagh fault and Jhelum fault. This area is deformed and the traps are mostly structural traps i.e. anticlines, faults, pop-ups etc. The stratigraphy of the area is till Khewra Sandstone (Cambrian age), but every formation cannot be the reservoir. We have studied four possible extractable reservoirs; Khewra Sandstone, Chorgali Formation, and Sakesar Limestone. The best possible reservoir among these formations is Khewra Sandstone that consists of sandstone that has primary porosity and also has the best porosity percentage of up to 15 percent.Different procedures for finding hydrocarbon bearing zone were performed in this project, starting from time-depth charts to the correlation of well logs data and the seismic interpretation to find best reservoirs in this area. Five well log data are analyzed to refine the process for finding hydrocarbons including Caliper log, Spontaneous Potential log, Gamma ray log, Sonic log, Neutron log and resistivity log. With the help of these data, we interpreted Khewra Sandstone as the best reservoir of this area.

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