STRUCTURAL INTERPRETATION OF BALKASSAR ANTICLINE POTWAR SUB BASIN, PAKISTAN BASED ON 2-D SEISMIC DATA

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ABSTRACT

Seismic lines PBJ-5 and PBJ-10, obtained from Directorate General of Petroleum Concessions (DGPC), was shot by OGDCL in 1980 in the area of Balkassar which lies in the Central Potwar on the southern flank of Soan Syncline. Seismic line PBJ-5 is a dip line and PBJ-10 is a strike line. Two prominent reflectors R1 (Eocene), and R2 (Basement) were marked on the seismic section on the basis of observed reflection events. A fault was marked which continued along the Pre-Cambrian basement. Two more thrust faults were marked which showed fault-propagating folds in the form of anticlines of Balkassar. A time section was produced from the seismic section using the vibrating points and the two-way-times (TWT) of the reflectors and faults. The TWT were posted on the base map to make a time contour map of the Upper Eocene Chorgali Formation, as it was continuing throughout the area. The seismic velocities (Interval Velocity), given in the velocity windows on the seismic section, were used to find the average velocities of the Upper Eocene Chorgali Formation and the Pre-Cambrian basement. These average velocities were then used to find the depths of the formations for the geoseismic section. Well data of Balkassar OXY#1 was used to mark the thickness of the individual formations on the geoseismic section from Cambrian to Recent. The geoseismic section showed that the area was structurally deformed due to salt decollement and compressional tectonic movements. Traps for hydrocarbons were developed in the anticlines as they truncated against the thrust fault. Salt probably moved into these anticlines due to compressional movements and a Pop-Up structure was formed. The Balkassar anticline was the prospective zones and was the primary targets for oil exploration, where the depth of the Upper Eocene formation was almost 2400m, favorable for drilling.