

**2D SEISMIC INTERPRETATION OF KALLAR SYEDAN  
AREA AND PETROPHYSICAL ANALYSIS OF KALLAR X-01  
UPPER INDUS BASIN, PAKISTAN**



**By**

**NEHA EJAZ  
MUHAMMAD UMAIR SHAHID  
ZULQARNAIN ASHRAF**

**Department of Earth and Environmental Sciences  
Bahria University, Islamabad  
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**Thesis submitted to Bahria University, Islamabad in partial fulfillment of the  
requirement for the degree of BS in Geophysics**

**NEHA EJAZ**

**MUHAMMAD UMAIR SHAHID**

**ZULQARNAIN ASHRAF**

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Bahria University, Islamabad**

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## **ABSTRACT**

The main purpose of the thesis is to evaluate the structure and hydrocarbon potential using seismic and well log data of Kalar Syedan area, Upper Indus Basin, Pakistan. Kalar Syedan area lies in Potwar sub-basin. The Potwar sub-basin is situated at the northern margin of the Pakistan in the western foothills of Himalaya. It comprises of the Potwar Plateau, the Jhelum plain and the Salt Range. Five seismic lines PR-92-16, PR-92-19, PR-92-21, PR-92-26 and PR-92-26 of Kallar Syedan area and well logs of KALLAR X-01 of Potwar Basin were obtained from LMKR with the approval of Directorate General of Petroleum Concession (DGPC), Islamabad for seismic interpretation and Petrophysical analysis. Line PR-92-19 is trending N-S while other lines are trending E-W. Seismic lines PR-92-19 and PR-92-21 are strike lines whereas PR-92-16, PR-92-24 and PR-92-26 are the dip lines respectively. Velocity information required was given within the seismic sections that facilitated us to convert the time sections into depth sections. Conversion of depth sections is done with the help of average velocities and depth contour maps were generated. Two reflectors were marked that were of Murree Formation and Kuldana Formation. Interpretation results show that there are pop up anticline structures with adjacent syncline in the subsurface. Logging is done up to Murree formation which is at shallower depth. For Petrophysical analysis a zone have been marked in Murree formation and volume of shale, sonic porosity, average porosity, effective porosity, saturation of water and saturation of hydrocarbon is calculated and the result shows that the zone is water bearing i.e. it contains 80% water and 20% hydrocarbon.

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