

**ESTIMATION OF POROSITY WITH THE HELP OF
SEISMIC PROCESSING VELOCITIES OF MEYAL
FIELD, UPPER INDUS BASIN, PAKISTAN**



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2016

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A thesis submitted to Bahria University, Islamabad in partial fulfillment
of the requirement for the degree of B.S in Geophysics

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ACKNOWLEDGEMENTS

We would like to pay thanks to our supervisor Muhammad Fahad Mahmood, Department of Earth and Environmental Sciences, Bahria University, Islamabad, for spending this valuable time in providing detailed comments, correction of each wrong step and for solving all issues regarding our thesis, and also giving us an initiative to this study and helped us to complete work.

We are deeply indebted to Dr. Muhammad Zafar, HOD, Department of Earth and Environmental Sciences, Bahria University, Islamabad, for his moral support and guidance to materialize this study.

Last but not the least we are also grateful to our parents for their support and patience during the period of our studies.

ABSTRACT

This thesis is based on 2D seismic reflection data and well logs to find the porosities from seismic velocities and correlate with total porosities from well data. The data is acquired from the area of Meyal, Upper Indus Basin (Punjab) of Pakistan, provided by the Landmark Resources (LMKR) with the permission of Directorate General of Petroleum Concession (DGPC). Five seismic sections having line numbers along with Base Map are 97-MYL-10, 97-MYL-11, 93-MYL-02, 97-MYL-06, and 97-MYL-12 lines. Out of these five seismic lines; 97-MYL-10, 97-MYL-11, 93-MYL-02 and 97-MYL-06 are dip lines. The remaining line, 97-MYL-12 is a strike line. Root mean square are also provided with the seismic section at selected Common Depth Points (CDPS) and are used for the calculation of velocities to convert the given time into depth. Five reflectors were marked due to their prominent reflection on the seismic sections. The two way travel time structural map for each reflector has been drawn and depth contour map of reservoirs has also been drawn by using velocity and one way travel time. Moreover, cross sections in time and depth domains have also been drawn. The Meyal area is dominated by compressional regime where the thrust faults are dominated. By using well log data of Meyal-08P, the petrophysical analysis shows the characteristics of hydrocarbon bearing zone which confirms the results of the 2D seismic interpretation. The porosities calculated from seismic velocities V_p using the relation of Gardner equation to find the density and then applying the Time- Average equation and confirming the result by comparing with the result of porosities from petrophysical analysis. The total porosities are preferred in comparing with seismic velocities because both seismic and total porosities give the overall pore voids in a rock.

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