2D STRUCTURAL DELINEATION OF SAWAN AREA: PETROPHYSICAL ANALYSIS AND ROCK MECHANICS OF WELL, SAWAN-01 CENTRAL INDUS BASIN, PAKISTAN

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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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DEDICATION

We dedicate this work to our teachers and families especially Parents for their consistent encouragement, belief in our abilities, prayers and their endless love and affection which kept us motivated throughout our life.

ABSTRACT

The main purpose of the study is to evaluate hydrocarbon potential of a well named Sawan-01 in Sawan Gas Field, Lower Indus Basin, Pakistan and to delineate the subsurface structure and locate the perspective zone in the study area. This has been achieved by using complete suite of wire line logs and available well data and two dip lines PSM-98 202,PSM-96 114 and three strike line PSM-96 133,PSM-96 135,PSM-96 115. This complete set of data is issued by **Land Mark Resources (LMKR)** Pakistan with the prior permission of **Directorate General of Petroleum Concessions (DGPC)**, Pakistan.

Five horizons were marked which were Sui Main Limestone(SML), Ranikot(BT), Top Lower Goru (TLG), TOP C, TOP B and two way time ,velocity contour maps, Average velocity maps were generated of these above mentioned horizons. Depth contour maps were generated with the help of two way time and velocity contour maps which delineates the subsurface structures and tectonic activities which took place throughout geologic past. 3D surfaces were also generated.

Further, the reservoir was evaluated for the hydrocarbon potential in detail using set of equations and different formation evaluation charts made by Schlumberger. The methodology adopted to accomplish this task include; the measurements for the Shale volume by using Gamma Ray Log, Porosities of the Reservoir zone by density Log, Resistivity of water by using Spontaneous potential log, Saturation of water in the zone of reservoir zone by the results for the dissertation were then displayed in the form of excel sheets and graphs for the better approach towards the task. These all displayed results show a good reservoir quality.

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