

**2D SEISMIC INTERPRETATION AND FEASIBILITY
STUDY FOR AVO ANALYSIS USING ROCK PHYSICS
MODELING IN KADANWARI FIELD, LOWER INDUS
BASIN, PAKISTAN**



By

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University, Islamabad**

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

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ABSTRACT

Kadanwari Gas field was discovered in 1989 with Lower Goru sand packages as prolific reservoirs. It was initially considered to be a Four-way dip closure trap however during field appraisal stratigraphic trap potential of Lower Goru sands was observed. Since then, a lot of work has been done using advance seismic techniques for reservoir characterization to enhance production profile.

This feasibility study focuses on utilizing Fluid replacement modeling and AVO modeling to determine AVO response of Lower Goru sands with varying reservoir fluids. The objective of this research is to observe variation in log response and elastic moduli of sands with varying pore fluid. Lower Goru E sand interval is producing reservoir in the area and is used in this study. V_p/V_s plots for original log curves (Gas filled) as well as Fluid substituted (Water filled) are generated and variation in data points is analyzed. Furthermore Fluid substituted curves and original log curves are used to generate AVO synthetic seismograms. AVO response is analyzed in these traces by generating a gradient curve. Intercept and Gradient plots are then generated and the outcomes are compared with theoretical crossplots to determine whether the AVO model response for Lower Goru E Sands is accurate. Structural interpretation is performed on available 2D seismic data to develop an idea about orientation of faults and behavior of strata in response to regional tectonics. Petrophysical analysis of the area defines probable producing intervals of the reservoir.

The results of this feasibility study indicate that Lower goru E sands show AVO response after rock physics modeling. It is further proposed to conduct AVO analysis on Pre-Stack gathers to characterize reservoir as a part of field development.

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