2D SEISMIC DATA INTERPRETATION AND ROCK PHYSICS TO MODEL THE SUBSURFACE ROCKS, KADANWARI AREA, SINDH, PAKISTAN.

Saeed Ali Muneeb

Hussnain Yousaf

Department of Earth and Environmental Sciences,

Bahria University, Islamabad.

DEDICATION

This thesis is dedicated to our parents who have supported us all the way since the beginning of our lives.

When we were young,
they taught us to walk.
when we grew older,
guided us on right path.
Always with us they are,
they are two shining stars,
like a shadow, they follow,
like our guides they are so.

Also, this thesis is dedicated to our teachers who have been a great source of motivation and inspiration.

Finally, this thesis is dedicated to all those who believe in the richness of learning.

ACKNOWLEDMENT

First of all, we would like to express our deepest sense of gratitude to our supervisor Sir Yasir Khan Jadoon for his patient guidance, encouragement and excellent advice throughout our thesis work. Our sincere thanks to our university supervisor Sir Amir Malik for his continuous guidance, advice and encouragement throughout the course of the thesis. We are also thankful to all of our teachers, because their teachings helped us throughout our thesis work. We are thankful to our colleagues Muhammad Bilal Paul, Usman Hanif, Usman Bukhari and Asim Mehmood who helped us in our thesis work. We would also like to thank our families for the support they provided us through our entire life. We would also like to thank Head of Department for supporting us and rest of the staff for supporting us throughout our university life. Finally, we would like to thank everybody who was important to the successful realization of thesis, as well as expressing our apology that we could not mention personally one by one.

ABSTRACT

The seismic interpretation of Kadanwari area is done to identify faults in study area. The type of faults indicates the extensional regime in the area. The faults are normal faults and form horst and grabben structures. Prominent reflectors are marked and formations are identified on seismic data. The expected reservoirs in the area are B sand and C sand of Lower Goru Formation. The two way travel time and depth structure contour mapping of marked reflectors is done on base map. Traps are identified on contour maps. The Lower Goru sands are proven reservoirs in the study area and the surrounding fields. Therefore, accumulation of hydrocarbons is most probable in the identified traps of both C sand and B sand of Lower Goru formation in study area. The analysis of expected reservoirs B sand and C sand is done using rock physics. The relationships between Vp, Vs, Porosity, Density, Depth, Vp/Vs and Elastic Parameters help us to understand the changes in B sand occurred due to overburden, tectonic activities, transition zones, increase in depth, porosity and due to the presence of fluids in the reservoirs. The Vp, Vs, Porosity, Density, Depth, Vp/Vs and Elastic Parameters are calculated on well data and their plots are drawn versus depth which show the changes in their values at different depths. The Vp, Vs, Porosity and Poisson's ratio calculated on seismic lines are extended throughout the area using contour maps. The contour maps explain the variations of calculated parameters in the area. The porosity of expected reservoirs is identified to be good enough for accumulation of hydrocarbons. The higher values of Poisson's ratio in some areas show the presence of hydrocarbons and especially in the identified structure location.

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