STRUCTURAL INTERPRETATION BY USING 2D SEISMIC AND PETROPHYSICAL ANALYSIS OF MISSA KESWAL WELL-01, UPPER INDUS BASIN, PAKISTAN

By

ABDUL QADIR

NOOR UL ISLAM

FARMAN ALI KHAN

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 B.S in Geology

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ABSTRACT

Missa Keswal Oil Field is located at a distance of about 60 Km in the south-east of Islamabad in the eastern part of Potwar basin. The Coordinates of selected well -01 is 33° 12' 0" North, 73° 22' 0" East respectively.

The used data obtained for both petrophysical and seismic processes included the seismic lines 905-QZN-4,994-GNA-12,994-GNA-09,994-GNA-19,and well log data of Missa Keswal-01 from Landmark Resources(LMKR) with the approval of Directorate General of Petroleum Concession (DGPC) to complete our study work of selected area. In the present study our strike line is oriented in SW-NE and three dip lines are oriented in SE-NW. Chorgali Formation and Khewra Sandstone are marked as reflector 1&2 respectively to investigate the geological structure in the area. Some major faults were identified, along these reflectors. Depth, velocity and time contour maps were generated which shows the pop-up structure in the subsurface and is acting as trap for hydrocarbons.

Petrophysical analyses was carried out to identify the reservoir and to evaluate the volume of shale which was 37%, effective porosity =13%, average porosity =20.01%, saturation of water =45% and saturation of hydrocarbon was 55%.The petrophysical analyses confirm the presence of strong hydrocarbon zone in the Chorgali formation.

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ABBREVIATIONS

B.H.T	Bottom hole Temperature
Fm	Formation
GRlog	Gamma ray reading of formation
GRmin	Gamma ray minimum
GRmax	Gamma ray maximum (shale)
OGDCL	Oil and Gas Development Company Limited
LMKR	Landmark Resources
LLS	Laterolog Shallow
LLD	Laterolog Deep
MSFL	Microsphericaly Focused Log
SRPFB	Salt Range Potwar-Foreland Basin
SP	Spontaneous Potential
Vsh	volume of shale
ρb	formation bulk density
ρf	fluid density
H	Mud Cake Thickness
Sh	Saturation of Hydrocarbons
Sw	Saturation of Water
Rmfeq	Resistivity of Mud Filtrate Equivalent
T.D	Total Depth
Temp.	Temperature
S.st	Sand Stone
BSCF	Billion Standard Cubic Feet
MMSCFD	Million Standard Cubic Feet per Day

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