APPLICATION OF WELL LOG ANALYSIS TO ASSESS PETROPHYSICAL PARAMETERS OF JOYA-MAIR OIL FIELD UPPER INDUS BASIN PAKISTAN

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Abstract

Potwar province is one of the most productive and one of the oldest hydrocarbon productive province of Pakistan. The early productions in this province dates back in 1943 till that and number of wells have so far been drilled in this province. The current study is concerned with the Petrophysical evaluation Joya Mair oil field located in Potwar province. Two wells names Minwal X-01 and Joyamair-04 is selected for research, where the prevailing assessment involves identifying, marking, analysing and interpreting the reservoir zones from well logs and computational analysis through different formulas. Several well logs were used comprising sonic log, gamma ray log, density log, neutron log, and resistivity logs. These analysis were carried out in order to evaluate the petrophysical parameters such as the shale volume (Vsh), total porosity (PHT), effective porosity (PHE), water saturation (Sw), hydrocarbon saturation (Sh), and pay zone. After the analysis and interpretation of well logs it was concluded that the best possible reservoir in study area is Chorgali and Lockhart limestone respectively in Minwal X-01 and Joyamair-04. These reservoirs have good net pay zones thicknesses ranges from 20 feet to 52 feet. Based on well log data, these reservoirs are investigated as a fine class reservoir rocks which is evident from high effective porosity and hydrocarbon saturation.