PERMEABILITY DETERMINATION FOR PREDICTION OF FORMATION PRODUCTIVITY ON CARBONATE RESERVOIR BATURAJA FORMATION "X" FIELD ON NORTH WEST JAVA BASIN

ABSTRACT

By:
Emanuel Jiwandono Saputro
211.014.002

Fields "X" is one of the oil and gas fields located in Bekasi District, West Java Province. This field is located in the north west java basin and have been producing since October 1999 until today on reservoir from Baturaja Formation.

Determination of permeability on carbonate reservoir is generally more difficult than silisiclastic. Permeability is determined by analysis of well logs are validated against permeability derived from core analysis and well test. The determination of calculation permeability method appropriate to carbonate reservoirs be a key in counting prediction formation productivity. Permeability value in carbonate reservoirs is very difficult to predict, this is due to two types of porosity namely the matrix porosity and fracture porosity.

In this study aims to determine the physical properties of Baturaja productive formation include clay content (V_{shale}), effective porosity (Ø) and water saturation (S_w) so that calculation of valid permeability can be determined. The analysis shows the value of clay content (V_{shale}) of about 0 – 26% with an average of 4%, effective porosity (Ø) of about 0 – 40% with an average of 16%, water saturation (S_w) of about 35 – 100% with an average of 58% and permeability of about 0.1 – 3888.3 mD with an average of 24.62 mD. The calculation of valid permeability at Baturaja Formation carbonate reservoirs can be used to predict the productivity formation of the productive intervals that have not yet done perforation or produced. Productivity index prediction analysis performed on ten wells. The analysis shows that eight wells still have a productive layer which has good (medium PI) to excellent (high PI) productivity index categories is 0.5 to 1.5 or greater than 1.5 so that it can be used as a target candidate perforation in the future.

Keywords: permeability (k), characterization , validation, productivity index (PI)