

ABSTRACT

EVALUATION OF CALCULATION OF DRILL PUTTING LIFT CAPACITY IN 8 ½" TRAY DRILLING OPERATIONS WELL KV-08 FIELD KL

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The KV-08 well is a vertical well located in the KL Field, South Sumatra Basin. When carrying out drilling operations using a pump flow rate of 370 gpm on an 8 ½" trajectory, there was a decrease in the penetration rate which was thought to be due to the large amount of cuttings that had settled on the bit. This indication, if allowed to continue, will cause losses in operational costs and drilling problems such as bit balling. Therefore, it is necessary to evaluate the drilling cuts on the 8 ½" route.

Calculation of Lifting Capacity begins with collecting data on the physical properties of drilling mud consisting of pump flow rate, drilling mud density, formation data consisting of cutting density, cutting diameter and well profile. This research focuses on three (3) areas on the 8 ½" route, namely Area 1 (Inner Diameter of Casing-Drill Pipe), Area 2 (Open Hole Drill Pipe), Area 3 (Open Hole Drill Pipe). After the data is collected, the next step is to calculate the fluid flow speed in the annulus, calculate the critical speed and Reynolds Number to determine the type of fluid flow, effective viscosity to calculate the drill cuttings descent speed, and Lifting capacity using two (5) different flow rates. The pump flow rates used for evaluation were 370 gpm, 420 gpm, 470 gpm, 520 gpm, and 570 gpm. After obtaining the Lifting capacity figure, a comparison of the Lifting capacity value is carried out based on the pump flow rate used in the evaluation. In the calculations, the Lifting capacity figure is said to be effective if it is greater than 90%.

This research resulted in a large lifting capacity in Area 1 using a pump flow rate of 370 gpm of 88%, 420 gpm of 89%, 470 gpm of 90%, 520 gpm of 91% and 570 gpm of 92%. Then in Area 2 it produces LC values with a pump flow rate of 370 gpm of 89%, 420 gpm of 90%, 470 gpm of 91%, 520 gpm of 92%, and 570 gpm of 92%. Area 3 produces LC values with a pump flow rate of 370 gpm of 92%, 420 gpm of 93%, 470 gpm of 94%, 520 gpm of 94%, and 570 gpm of 95%. Based on the results of the evaluation calculations, it was concluded that starting from a pump flow rate of 470 gpm, an effective lifting capacity value was obtained. This indicates that the greater the pump flow rate, the more effective the cutting will be lifted.

Key words: *Drilling Mud, cutting, Lifting Capacity, flow rate*