DESIGN OF MAINTENANCE OR REPLACEMENT OF
PUMPING UNIT USING COST ANALYSIS

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ABSTRACT

Pumping Unit is the main component of the heavy oil process to maintain sustainable production. Therefore the high pumping unit reliability and availability become something important to be maintained. Pumping unit data analysis is needed to determine maintenance schedule / replacement that will impacted to entire maintenance cost.

Research was conducted by doing literatures study, field study and identified the problems in pumping unit operations and analyze pumping unit reliability component by calculate the MTBF and MTTR. Cost analysis also conducted to define the optimum replacement time interval.

The intent of this research is to determine the optimum replacement time interval with the lowest cost and resulted on the declining on pumping unit failures and un planned shut down to maintain the reliability and availability of pumping unit which reduce the LPO (Loss Potential Opportunity) or loss due to un planned pumping unit down.

By using the age replacement program, the replacement time interval for 4 pumping unit components (V-belt, electric motor, pulley dan shaft) can be done to reduce the maintenance cost. By this method the optimum time interval time already determine for 4 critical components by maintain the 90% reliability that will be resulted on the saving cost of USD 25,897 by extend the interval time of V-belt from 158 to 208 days, Electric Motor from 107 to 167 days, Pulley from 260 to 304 days and Shaft from 152 to 208 days.

Key words: Pumping unit, cost analysis, interval time, reliability and availability, Loss Potential Opportunity.
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