

ABSTRACT

PT. XYZ is a State-Owned Enterprise (BUMN) engaged in oil and gas mining in Indonesia. In supporting the production process of PT. XYZ has several refineries. One of them is the third processing unit located in Palembang. The P-06 CDU-3 engine is one of the machines that works for a long time. The purpose of this study is to provide proposals for the maintenance of centrifugal pump machines or P-06 CDU-3 machines and optimal total maintenance costs using the Reliability and Risk Centered Maintenance (RRCM) method. Based on the results of the analysis using the risk matrix, 2 components were obtained which became critical components of the P-06 CDU-3 Machine, namely mechanical seals and bearing components. The risk matrix value for mechanical seal components is 8 and bearings are 9, these values are obtained by multiplying the results of the likelihood and severity assessment. After calculations using the Reliability and Risk Centered Maintenance (RRCM) method, 3 proposed maintenance tasks were obtained, including 2 scheduled on-condition tasks and 1 scheduled discard task. After obtaining the appropriate proposed maintenance task, then determine the time interval of the proposed maintenance task of each critical component. The time interval for the proposed maintenance task is to change the mechanical seal every 5 months and check periodically on the condition of the pump once every 1 month, while for bearing components, periodic checks are carried out once every 1 month. Based on the calculation results using the RRCM method, the total proposed maintenance costs were obtained at IDR 30,879,110 while the company's total actual maintenance costs were IDR 46,318,665. So, it can be concluded that the proposed maintenance costs are lower by IDR 15,439,110 compared to the company's actual maintenance costs so the company can save maintenance costs by 33.3%.

[Keywords: *Maintenance, Risk Matrix, Reliability, and Risk Centered Maintenance (RRCM), Uncertainty Assessment*]