

ABSTRACT

The MP1250 Crusher is a critical component in the concentrate production process at the CMP area of PT Freeport Indonesia. However, the high frequency of failures, especially in the Liner Mantle & Bowl components, leads to significant downtime that directly affects production performance. This study aims to develop a proposed preventive maintenance schedule using the Reliability Centered Maintenance (RCM) approach to reduce potential failures and improve machine reliability. The identification of critical components was carried out through Risk Matrix analysis, followed by the development of an RCM Decision Worksheet and analysis of Time to Failure (TTF) and Time to Repair (TTR) using Minitab 22 software. The results showed that the current preventive maintenance interval of 43 days results in an annual cost of IDR 953,403,120. In contrast, the proposed preventive maintenance interval of 30 days generates cost efficiency with an annual cost of IDR 845,482,704. This proposal has also been verified using the Scheduled Discard Task approach, demonstrating that the new schedule can improve machine reliability while reducing downtime risk. It is expected that this proposal will serve as a strategic foundation for data-driven maintenance decision-making to minimize downtime and support the achievement of the company's production targets.

Keywords — MP1250 Crusher, Downtime, Preventive Maintenance, Reliability Centered Maintenance (RCM), Weibull Distribution, Scheduled Discard Task, Cost Efficiency, Risk Matrix.