

ABSTRACT

The Indonesian Railway is the major operator of public railways in Indonesia. It has locomotive depots where the locomotives maintenance and repair are doing. In Bandung Locomotive Depot there are several types of locomotive, one of them is diesel electric locomotive CC 204. Locomotive CC 204 has a highest power, so the best performance is needed for this locomotive. The preventive maintenance activities in this depot have not based on optimal interval that consider characteristics of damage, it causes a high number of corrective maintenance. In addition, maintenance delay often occurs due to unavailability of required spare parts. Therefore, it needs an effective and efficient maintenance strategy, and also spare parts procurement optimization for locomotive CC 204.

Determination of effective and efficient maintenance strategy were obtained using Reliability Centered Maintenance (RCM) on all components in critical subsystem. Based on the research results, obtained four types of proposed maintenance tasks on failure modes level such as scheduled on-condition, scheduled restoration, scheduled discard, and scheduled failure finding. Interval time of doing maintenance depends on the task of each failure mode. Total maintenance cost to implement the proposed task for 1 year is Rp 1.994.500.000, which is 42% less expensive than the total cost of existing maintenance plus consequences of breakdown maintenance. Then, the calculation of spare parts procurement optimization for 1 year is using Poisson Process which obtained 56 non-repairable spare parts and 26 repairable spare parts.

Keywords: *Reliability Centered Maintenance, Preventive Maintenance, Spare Part, Poisson Process, Spare Parts Optimization, Locomotive, The Indonesian Railway*