

ABSTRACT

Railroad is one of the most important component in railways transportation in Indonesia. In order to support the railways transportation, the rail must be in a good condition and quite good reliable to minimize failure on those component. To assure the rail is available enough, there is a need for an optimum number of inspection. So the inspection will determine that the rail is quite reliable to operate, but quite low in cost. Then also need for periodic renewal for the component, to ensure the reliability level of the component and maintain the level of cost quite low.

In order to determine the optimum number of rail inspection, the risk based inspection method is performed. Before determining inspection interval, the statistical distribution of each part of rail must be identified and then determine the availability level to know the remaining life of rail. After the remaining life is determined, inspection interval can be calculated based on remaining life and MTBF data for each rail. After those steps, life cycle cost method performed to determine the renewal policy for the component.

Based on the data calculation, remaining life for type R.42 is 16,5 years and remaining life for type R.54 is 21,25 years. Inspection interval for each type of rail is different based on the number of failure. And then based on the LCC calculation for railroad system along Cicalengka-Cibatu, the smallest total annual equivalent of LCC for 5 years is Rp 33,154,318,640. For the next research are expected to using the data with the exact number of failure and cost, so the better preventive maintenance could be performed.

Keywords: Risk Based Inspection, Life Cycle Cost, Remaining Life, Inspection Interval