

ABSTRACT

Diesel engine is an internal combustion engine in which ignition of the fuel which is injected into the combustion chamber is caused by the elevated temperature of the air in the cylinder due to mechanical compression. Diesel engines on the excavator Komatsu PC 200-8 used continuously can reduce the reliability of Diesel engines and result in reduced engine performance. To maintain the reliability of Diesel engine excavator Komatsu PC 200-8 required proper maintenance. A good maintenance program needs to be designed to ensure the reliability of the machine therefore it can operate according to function and meets the standards of safety and quality.

Reliability Centered Maintenance (RCM) studies using this method aims to determine the critical components, combining qualitative and quantitative factors in the RCM decision worksheet and determine the optimal treatment policy basis. The data collected identified through the process of developing a functional block diagram, system failure and function failure, and failure mode and effect analysis (FMEA), logic tree analysis (LTA), and task selection. Based on the calculation happens for increasing the reliability of the critical components.

The results of this study indicate that there are 2 failure modes were classified into category A, 21 of categories B, and 14 of categories D/B. The maintenance method of each component can be planned from these results. This study shows that most of the parts on Diesel engine recommended to condition directed task. There are 35 failure modes were categorized into condition directed task and 2 failure modes of time directed task.

Keywords: Reliability Centered Maintenance, maintenance, *Diesel* engine, Logic Tree Analysis, LTA, Failure Mode And Effect Analysis , FMEA

INTISARI

Mesin *Diesel* adalah mesin pembakaran internal di mana penyalaan bahan bakar yang diinjeksikan ke dalam ruang bakar disebabkan oleh peningkatan suhu udara dalam silinder karena kompresi mekanis. Mesin *Diesel* pada *excavator* Komatsu PC 200-8 yang digunakan secara terus-menerus dapat mengurangi keandalan Mesin *Diesel* dan menghasilkan kinerja mesin yang berkurang. Untuk menjaga keandalan Mesin *Diesel* pada *excavator* Komatsu PC 200-8 membutuhkan perawatan yang tepat. Program perawatan yang baik perlu dirancang untuk memastikan keandalan mesin sehingga dapat beroperasi sesuai fungsi dan memenuhi standar keselamatan dan kualitas.

Reliability Centered Maintenance (RCM) digunakan untuk menentukan komponen kritis, menggabungkan faktor kualitatif dan kuantitatif dalam lembar kerja keputusan RCM dan menentukan basis kebijakan pengobatan yang optimal. Data yang dikumpulkan diidentifikasi melalui proses pengembangan *functional block diagram*, *failure system and function failure*, dan *failure mode and effect analysis* (FMEA), *logic tree analysis* (LTA), and *task selection*. Berdasarkan perhitungan terjadi untuk meningkatkan keandalan komponen penting.

Hasil penelitian ini menunjukkan bahwa ada 2 mode kegagalan yang diklasifikasikan ke dalam kategori A, 21 kategori B, dan 14 kategori D / B. Metode pemeliharaan masing-masing komponen dapat direncanakan dari hasil ini. Studi ini menunjukkan bahwa sebagian besar bagian pada mesin *Diesel* direkomendasikan untuk mengkondisikan *condition directed task*. Ada 35 mode kegagalan dikategorikan ke dalam *condition directed task* dan 2 mode kegagalan dari *time directed task*.

Kata kunci : *Reliability Centered Maintenance*, perawatan , mesin *Diesel*, *Logic Tree Analysis*, LTA, *Failure Mode And Effect Analysis* , FMEA