ABSTRACT

Engine is the main component in every heavy equipment units. Moreover, engine with serial numbers 1WW01193 placed on the Caterpillar 16G grader unit with unit number G110 on 19 January 2020 experienced a failure. After investigating this matter, the result shows that the connecting rod bolt was broken. The connecting rod bolt has several functions, such as a fastener and a connector between the connecting rod and the connecting rod cap. This research was conducted to analyze the damage that occurs in the engine components in order to discover the release cause of the connecting rod from the engine.

This research used the AFA method (Applied Failure Analysis), begun by stating a problem and collecting data related to the fact. Additionally, this research collected the data based on the installation history, maintenance history, top-up oil history, oil analysis, macro pictures, and other supporting data.

The results of the study show that the leading cause of the engine damage is not from the rod bolt material. However, it is due to the nonstandard torque given to the connecting rod during the installation process. The prevention step to minimize the similar failure is by reviewing the bolt usage, ensuring all the used equipment has been calibrated, and ensuring the bolt is tightened with the precise torque.

***Keywords**: Bolt, Engine, Applied Failure Analysis*