

## ABSTRACT

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Work rather than *ballast* pumps is very important in an effort to undertake loading and unloading on board. The need for maintenance, repair and attention to the *ballast* pump is one of the work done by the engineer for the smooth operation of loading and unloading. *Ball bearings* are an important component of *ballast* pumps because they are widely used and important, damage to the *ball bearings* often becomes damaged in the *ballast* pump as it affects the pump.

The purpose of this study is to be able to find out anything that affects the performance of *ballast* pumps caused by damage from ball bearings in MV. DK 02 as well as impact on ballast pump and how to overcome the damage by using combination of *fishbone* method and *fault tree analysis*.

Based on the results of research conducted in MV. DK 02 using this method produces factors that can affect *ball bearing* performance against *ballast* pump such as the application of PMS (*Plan Maintenance System*) not executed according to the provisions, the quality of *ball bearings* that do not meet the standards and there is contamination of dust and dirt that impact on operational damage *ball bearing* with pump and *ball bearing* components at the pump. Damage to the *ball bearing* itself in the form of wear, vibration, corrosion, physical defects in each component while at the pump such as noise, excessive vibration, suction pressure or abnormal output, damage to the *shaft*, *bhusing*, *mechanical seal*. Factors and impacts are the results of research that can be traced further so as to find ways to overcome the problems in ball bearings.

Therefore, individual *ball bearing* maintenance needs to be done in various ways such as observation, characteristic introduction, and early prevention of damage such as grease lubrication to help smooth the performance of *ballast* pumps that have an important effect on loading and unloading activities on board.

Keywords: *Ball bearing*, maintenance, repair and *ballast* pump