ABSTRACT

The increase in coal production every year has an influence on the transport volume of coal trains of PT. KALOG is getting higher. This increase causes the current number of train unloading equipment to be unable to keep up with this increase and has an impact on the poor performance of train unloading, which is indicated by the unachieved of train's waiting time target.

The coal train unloading system is a very complex system and many uncertainties occur, so the appropriate method to use is discrete event simulation. The simulation model is designed using the Simulation Arena software. The results of the simulation method are 4 alternative scenarios with two conditions between train arrivals, namely normal and extreme, which will be selected by the Bonferonni test.

In normal conditions, the entire scenario could reduce the time a train unloading operations at nearly the same time. In extreme conditions, Scenario 4 has the highest reduction in train unloading operating time, which is 30.7%.

The results of this study recommend the addition of a tool with a combination of 1 unit of Gantry Crane integrated with coal traveling hopper and 5 units of Dump Truck with a decrease in train waiting time by 16.25% and financially feasible NPV (Net Present Value) of Rp. 1,879,258,172.

Keywords*: Discrete Event Simulation, Train Unloading, Logistic, Coal*