ABSTRACT

The role of sea transportation in Indonesia’s maritime industry is so important, including coal transportation services. This research addresses a coal transportation study from Tarahan to Power Plant in Suralaya, one of Power Plant belongs to PT. Indonesia Power using Discrete Event Simulation. The existing condition of sea transportation from Tarahan Port to Suralaya is operated by PT Bukit Asam Tbk, the biggest coal supplier for power plant in Suralaya. Currently, two bulk carriers with capacity of 10096 dwt (KM Tarahan), and 27000 dwt (KM Saraswati), and several barges are operated to fulfill the demand. By the increased coal demand, PLTU Suralaya had planned to increase coal supply from PTBA up to 8 million tons per year. Thus, a review is needed towards the appropriate quantity and size with technical data at Tarahan loading port and Suralaya port, then The increasing demand of coal can be fulfilled by the contract, and the electricity supply for java-bali always available. By using the data of business processes of both port the simulation of coal transport is created and the determine the scenarios of number and optimal size of the vessels are created. The result of simulation shows that only two scenarios can supply the increasing demand. The first are two ships with the size 35,000 tons and a 10,000 barge tons with unloading rate up to 1500 Tons/hour then the second are two ships with the size 40,000 tons and a 10,000 tons barge with unloading rate up to
1500 tons/hour, to supply the increased demand for coal power plant Suralaya by 8 million tons per year.

**Keywords:** Discrete Event Simulation, Coal Transportation, Fleet Size