

SUMMARY

Asma Amalia Abdul Gani, Departement of Industrial Engineering, Faculty of Engineering, Universitas Brawijaya, October 2017, *Determination of Compressed Natural Gas Distribution Strategy and Route to Minimize Time*, Supervisors: Ceria Farela Mada Tantrika and Ratih Ardia Sari.

PT. Excelsior Strategy Mandiri is a manufacturer of CNG (Compressed Natural Gas) that supplies the needs of CNG for Gas Engine Power Plant (PLTMG) PT. PLN Batam. CNG is delivered to PLTMG Tokojo and PLTMG Kijang to be used for alternative fuel. Because of sea transport, tidal flow can occur and will cause the vessels that carry skid tubes unable to dock to ports for loading and unloading, and the port facilities are not specifically designed for CNG transportation. As a result, the CNG distribution may be hampered, CNG supply are delayed. The company already has the route currently used and alternative route, but there is no analysis of route determination. The purposes of this study are to minimize delivery time, minimize mileage, and minimize distribution cost. Other than that, it is used for the calculation of unit cost 1 MMBTU.km.

This research used Monte Carlo simulation with direct shipment and temporary storage distribution strategy. Monte Carlo simulation is used to describe the distribution of delivery time by probability distribution approach. Tidal flow are probabilistic events that contain natural elements and cannot easily be predicted. So, by using Monte Carlo simulation, the delivery time range can be known. And also mileage, distribution cost and unit cost 1MMBTU.km will be calculated and compared so the best route can be determined.

The results of this study, factors that used in determining the route and distribution strategy CNG are time, distance, and distribution costs. Time becomes a major factor in route selection and strategy to avoid delays in delivery. Current routes and distribution strategies use direct shipment strategies and require delivery time at intervals of 15 hours 10 minutes and 18 hours 34 minutes, the total mileage is 95.43km and total distribution cost is Rp 20.340.435. While the recommended route used temporary storage strategy with smallest delivery time, mileage, and distribution cost. Delivery time is at intervals of 10 hours 58 minutes and 15 hours 46 minutes, the total mileage is 60.35km, and total distribution cost is Rp17.086.337. The unit cost of direct shipment strategy is Rp0,0305/MMBTU.km. While the unit cost of temporary storage strategy is Rp0,0257/MMBTU.km. Therefore, temporary storage strategy can be used by PT. Excelsior Strategy Mandiri.

Key Words: *Distribution Strategy, Monte Carlo Simulation, Water Transportation*