ABSTRACT

The competition between ship liner is increasingly tight. The flow of delivering goods by ship in Indonesia is increase. PT XYZ is one of the forefront shipping company in Indonesia. PT XYZ has commitment to improve the performance of the company continuously by efficiency. Stevedoring activity as core activity in shipping, is the critical element to the efficiency of operational. Shifting is one of activity in stevedoring that does not have value added. It is the temporary movement of the containers to another place. There are 128 shifting occurs in PT XYZ from October 2013 to March 2014. The highest number of shifting is on Hilir Mas Ship in March 2014 by 36 shifting. Efficient stowage planning in most case can reduce number of shifting and operating costs. This research use CSP mathematical model from Ambrosino, 2004 with adjustment in constraint of weight stacking and stability to be soft constraint. Violation of these constraints will be given a penalty. Completion of the model is done using a heuristic algorithm to obtain initial solution. Optimization is then performed by using Tabu Search Algorithm with MATLAB R2009a. Optimal value is the smallest value of objective function with the smallest penalty. The result of this study is the number of shifting in proposed stowage planning is 0. Total stevedoring cost reduction for 6 months respect to the proposed stowage planning is 0.56 % or Rp 99,910,875.00.

Key words : stevedoring, stowage planning, CSP mathematical model, heuristic algorithm, tabu search