ABSTRACT

Bulk carrier development has grown rapidly in several years. Bulk carriers not only sail on the sea but also on the river waters. This is due to the fact that the cargo that must be loaded is on the upper course of the river. The problem that occurs in the river is shallowing that causes its depth decreased. This problem causes a ship that can sail on the river must have a shallow draft. If this problem is abandoned, this will disturb cargo distribution. That is why a design of new ship that has shallow draft and able to sail in that shallow river is needed. In order to obtain the shallow draft, optimization of main dimensions must be done. Then steelweight of ship constructions is minimized as the objective function in the optimization process. In addition to changing main dimensions, optimization can also be done by choosing the type of material that will be used between the mild steel and high tensile steel, choosing frame and longitudinal spacings that will give a minimum steelweight. From that optimization process, the ship main dimensions: length (L) 137.41 m, breadth (B) 21.14 m, draft (T) 4.5 m, and depth (D) 9.98 m are obtained. The optimum frame spacing is 0.5 m and the longitudinal spacing is 0.5 m. The high tensile steel is used. Though the cost price of the high tensile steel is higher but its weight is lighter than mild steel.

Keywords: Optimization, Main Dimension, Bulk Carrier, River Waters.