ANALYSIS OF LIGHTSHIP WEIGHT BASED ON SWC AND INITIAL DRAFT SURVEY (CASE STUDY: BARGE MAJU LANCAR 300 3)

Name : Oris melas

Nim : 1304211070

Supervisors : Romadhoni, ST ,.MT

ABSTRACT

Estimating the lightship weight (LWT) is a crucial component in the initial ship design process, as it directly affects cargo capacity (DWT), stability, and sailing safety. Errors in calculating LWT can lead to over-drafting and operational failures of the ship. This study aims to analyze the comparison of LWT calculation results using the Steel Weight Calculation (SWC) method based on 3D modeling and the Initial Draft Survey method based on actual measurements on the Maju Lancar 300-3 barge. SWC calculations were performed through ship structure modeling using Maxsurf and Rhinoceros software, followed by volume and material area calculations to estimate the ship's steel weight. The Initial Draft Survey was conducted by measuring draft at six points on the ship, correcting for trim, list, and water density, then analyzing displacement using validated hydrostatic data. The results showed that the LWT based on SWC was 1,333.58 tons and the DWT was 9,948.42 tons, while the Initial Draft Survey results indicated an LWT of 1,349 tons and a DWT of 9,933 tons, with a difference of only 15.42 tons or an accuracy rate of 98.86%. These results indicate that the SWC method validated with the Initial Draft Survey can be an effective approach for more precise estimation of the ship's empty weight. Therefore, both methods can complement each other in verifying the ship's weight and estimating its cargo capacity.

***Keywords**: Lightship Weight, Deadweight Tonnage, Steel Weight Calculation, Initial Draft Survey, Barge*