WAVE RESISTANCE ANALYSIS OF DRONE SUBMARINE (REMOTELY OPERATED VEHICLE)

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ABSTRACT

This study describes the calculation of wave resistance raised by drone submarine. It is influenced by the position of a vehicle operating on the water surface (free surface). There are four positions of drone submarine operating that evaluated. They are snorkeling, submerged 0.5 m and submerged 1 m. Tent Function, Michlet Code dan CFD were developed to evaluate the magnitude of wave resistance in the four operating conditions and five speed variations. The evaluation results of drone submarine with a length of 2 m and a diameter of 0.25 m indicates that the deeper position of drone submarine from the water surface become smaller wave resistance values on the entire value of the Froude number. At a depth of 0.5 m below the water surface, the value of wave resistance decreased 64% from floating condition, and the greater the percentage decline value while operating at a depth of 1 m which is an average of 74% for all Froude Number. Number of percentage error for all variations are 3.29 % for floating condition, 4.3% for snorkeling condition, 10.01 % for submerged 0.5 m, 15.05 % for submerged 1 m that based on Tent Function and Michlet Code. Number of percentage error for all variations are 13.22 % for submerged 0.5 m, 16.34% for submerged 1 m that based on Tent Function and CFD.

Keywords: Drone submarine, Wave resistance, Tent Function, Michlet Code, CFD, Depth condition.