

Empirical Feasibility Study to Design and Build Rigid Hull Inflatable Boat for Special Operation Units in Sri Lanka Navy

DS Bogahawatte^{1#}, AATD Priyashan¹, LAKR Athukorala¹, and KA Kurukulaarachchi²

¹Faculty of Engineering, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka

²Director General Engineering, Sri Lanka Navy, Colombo, Sri Lanka

ds-bogahawatte@kdu.ac.lk

Abstract

Sri Lanka is an Island nation and with its geopolitical situation, safeguarding national interest entrusted with the country's naval force. Effective surveillance and search in territorial waters become paramount to deny such threats. United Nations Office for Drugs and Crimes under its Global Maritime Crime Programme in the South Asian region has indicated the feasibility to fund a project, if the Navy is capable of design and build the required boats. The authors being the naval architects in the Navy conducted an empirical feasibility study to understand and solve the critical success parameters to design and build the required boat. This study incorporates (a) to estimate the boat's total hull resistance at the specified maximum speed, (b) to estimate the total propulsive power and select the propulsion power package to achieve the maximum speed, (c) to optimize the Rigid Hull Inflatable Boat dimensional parameters, the centre of weight to improve performance and stability, and (d) to determine the fulfilment of intact stability criteria of the design. The total hull resistance at light running condition was 7.1 Kn. The Mercury diesel Bravo sterndrive unit with model number 4.2 (nominal power 350hp @ 3800 rpm) was selected as the most suited power package for this application. The length overall and the amidships beam were 7.5 m and 3.0 m respectively. The boat is capable of a range of 55 NM, and a maximum speed of 34 Kn. The intact stability fulfils the International Maritime Organization Intact Stability Code requirements.

Keywords: *Intact stability, Propulsive power, Total hull resistance*