# Model Testing and Simulation Validation of High Speed Planing Hull

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As part of a previous MIT thesis, a high-speed planing hull was designed with a cambered planing surface using methods established by Clement (Faison, 2014). Additionally, a cambered surface was designed using an in-house lifting surface program. The planing hull was stepped in a way to provide complete ventilation of the underhull aft of the step, with aft support provided by a set of supercavitating hydrofoils.

A model was constructed and subjected to a series of tests at the US Naval Academy hydrodynamics laboratory. Data was accumulated and analyzed by the author. Part of the analysis included statistical half and full factorial experimental designs to understand the physical parameters involved in model dynamic instabilities, and those parameters contributing the most to model drag. Additionally, computational fluid dynamic simulations were prepared and compared to physical testing data to establish a validation baseline with which to use CFD to aid in future model design.

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