

Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Improved Performance With Ventilation¹ ELLISON KAWAKAMI, 3M Corporation, SEUNG JAE LEE, ASHISH KARN, JIARONG HONG, Saint Anthony Falls Laboratory, University of Minnesota, ROGER ARNDT, Retired — Drag reduction and/or speed augmentation of marine vehicles by means of supercavitation is a topic of great interest. During the initial launch of a supercavitating vehicle, ventilation is required to supply an artificial cavity until conditions at which a natural supercavity can be sustained are reached. Various aspects of the flow physics of a supercavitating vehicle have been under investigation for several years at Saint Anthony Falls Laboratory. Both steady flow and simulated flow below a wave train have been studied. Using a high speed camera and the proper software, it is possible to synchronize cavity dimensions with pressure measurements taken inside the cavity to permit an in-depth study of unsteadiness. It was found that flow unsteadiness caused a decrease in the overall length of the supercavity while having only a minimal effect on the maximum diameter. Results regarding supercavity shape, ventilation demand, cavitation parameters and closure methods are reviewed in light of new studies that focused on various closure mechanisms.

¹Sponsored by ONR.

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Date submitted: 30 Jul 2013

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