Abstract Submitted
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Ventilated Supercavities[1] ELLISON KAWAKAMI, University of Minnesota, ROGER ARNDT — 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. A study has been carried out to determine various aspects of the flow physics of a supercavitating vehicle at Saint Anthony Falls Laboratory. During the present experimental work, the ventilated supercavity formed behind a sharp-edged disk was investigated using several configurations. Results regarding cavity shape and closure, as well as ventilation requirements versus cavitation number and Froude number are presented. In addition, effects related to flow choking in a water tunnel test section are discussed. Results obtained are similar in character to previously reported results, but differ significantly in measured values. An attempt was made to correlate results from water tunnel experiments to open flows, where there are no effects of flow choking. Supercavitation parameters, especially the minimum attainable cavitation number are found to be strongly affected by tunnel blockage and Froude number.

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Roger Arndt
University of Minnesota

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