

Abstract Submitted
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Performance Characteristics of a Vertical Axis Hydrokinetic Turbine BENJAMIN BAILIN, KAREN FLACK, ETHAN LUST, US Naval Academy — Performance characteristics are presented for a vertical axis hydrokinetic turbine designed for use in a riverine environment. The test turbine is a 1:6 scale model of a three-bladed device (9.5 m span, 6.5 m diameter) that has been proposed by the Department of Energy. Experiments are conducted in the large towing tank (116 m long, 7.9 m wide, 5 m deep) at the United States Naval Academy. The large scale facility allows for scale independent results. The turbine is towed beneath a moving carriage at a constant speed in combination with a shaft brake to achieve the desired tip speed ratio (TSR) range. The measured quantities of turbine thrust, torque and RPM result in power and thrust coefficients for a range of TSR. Results will be presented for cases with quiescent flow and flow with mild surface waves, representative of riverine environments.

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