

Abstract Submitted
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Run-up created by an advancing surface-piercing cylindrical structure KENNETH KALUMUCK, ALAN BRANDT, STEPHEN SCORPIO, JOSEPH HOPKINS, Johns Hopkins University Applied Physics Laboratory — A translating surface piercing object produces a plume of liquid that runs up its face and wraps around its sides before rolling over and breaking up as spray. Results of experiments conducted at various scales with vertical cylinders of circular and faired cross-sections advancing in salt water are presented. Experiments were conducted in both laboratory and large outdoor towing tanks. Results were recorded with video and still photography. The run-up height was found to scale with Froude number, Fr , based on cylinder diameter and consistent with results in the literature at smaller scales. It is also within 80% of theoretical values. The envelope of the side plume was seen to follow a simple ballistic trajectory. Run-up height was found to be unaffected by surfactant addition and introduction of step changes in cylinder width along its vertical extent at or near the free surface. Oscillation of the run-up height was observed to develop as Fr increased.

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