

Abstract Submitted  
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**Data Reduction Methodology for a Turbulent High Aspect Ratio Cylindrical Flow** DAMIEN BRETALL, DEBORAH FUREY, NSWCCD Carderock, PAISAN ATSAVAPRANEE, NSWCCD Carderock, KIMBERLY CIPOLLA, WILLIAM KEITH, NUWC Newport — High resolution stereo-PIV measurements were made on a long ( $> 1300$  m), 38 mm diameter cylinder towed from a vertical strut at speeds of 7 to 30 kts. The experiments were performed in the high speed tow tank at NSWCCD. 3-D velocity fields were obtained. The cylinder was ballasted to be approximately neutrally buoyant and towed through a stationary laser sheet oriented perpendicular to the tow direction. The objective of the study was to quantify the boundary flow along the cylinder for correlation with simultaneous wall pressure data. Algorithms were developed to track the center of the model through the field of view to provide the spatial relation of the velocity data with the cylinder boundary. This procedure required raw image analysis and isolation of the shadow and solid body regions of the data field. This data is used to collocate subsequent image data for averaging the boundary layer velocity information along the array. Approximately 40 instantaneous vector fields were obtained for each location. Mean and fluctuating streamwise and cross-stream velocities will be presented.

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