Abstract Submitted
for the DFD08 Meeting of
The American Physical Society

High Aspect Ratio Cylindrical Boundary Flow and Wall Pressure Spectra KIMBERLY CIPOLLA, WILLIAM KEITH, NUWC Newport, DAMIEN BRETALL, DEBORAH FUREY, PAISAN ATSAVAPRANEE, NSWC Carderock — 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. Wall pressure measurements were collected simultaneously at select axial locations. The experiments were performed in the high speed tow tank at NSWCCD. 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 the surface pressure data. The average velocity data was analyzed to compute boundary flow parameters used for nondimensionalizing the boundary layer pressure spectra. Mean and fluctuating streamwise and cross-stream velocities will be presented along with the corresponding pressure spectra.

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Date submitted: 05 Aug 2008 Electronic form version 1.4