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Characterization of flow control effects over a 3D turret MARLYN ANDINO, RYAN WALLACE, MARK GLAUSER, Syracuse University, RYAN SCHMIT, JAMES MYATT, Air Force Research Laboratory, R. CHRIS CAMPHOUSE, Sandia National Laboratories — Separated flow phenomena around a turret causes optical distortions on a laser beam. In an effort to minimize these effects, active flow control has been applied. On this effort, experiments ran at Syracuse University wind tunnel included tests at Reynolds number of 300,000, based on diameter and free-stream velocity, using a cylindrical turret. The model has 6 inches in diameter with a flat aperture of 2.8in diameter. The actuation system consists of 11 synthetic jets placed fore of a flat aperture facing the incoming flow. Particle Image Velocimetry was used to capture the 2-component velocity field over the turret. Simultaneous surface pressure and velocity measurements were acquired for flow characterization. Previous velocity results have shown a positive effect of the actuation on reducing the turbulence intensity observed at the center plane. Integral length scales also present the actuation effect in a periodic pattern observed that seems to have the actuation frequency. A reduction on the integral scales is also observed.

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