Virginia Tech, with support from the Office of Naval Research, is part of NATO AVT-387, focused on wind tunnel modeling and simulation requirements. The primary goal of the project is to quantify the geometrical, modeling, and mesh-related uncertainties in wind tunnel simulations. The project is broken up into two steps, first step being the empty wind tunnel case and the second step being the case with a model in the wind tunnel test section. VT’s Stability Wind Tunnel (SWT) facility is one of four facilities chosen for this effort. Currently the SWT is equipped with more than 500 pressure sensors and the capability to perform detailed flow field and boundary layer measurements. For this project, the SWT will compile the data of over 100 experimental runs with the help of undergraduate and graduate students. We plan to publish a systematically-refined family of grids for as-built and as-designed meshes to be used for computations. To collaborate on this research, VT would like to invite computers to use CFD solvers of their choice to obtain solutions for the empty wind tunnel case and the model-in-tunnel case. These CFD solutions will be compared with each other and against experimental data at NATO AVT meetings. As of now, AVT-387 has had a first round of CFD-to-CFD comparisons. Currently we have 8 computational teams from around the world interested in computing this case.

VT Stability Wind Tunnel Web Site: www.aoe.vt.edu/research/facilities/stabilitytunnel
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