Validation of Hybrid RANS/LES CFD Model for Realistic Captive Carriage Geometries

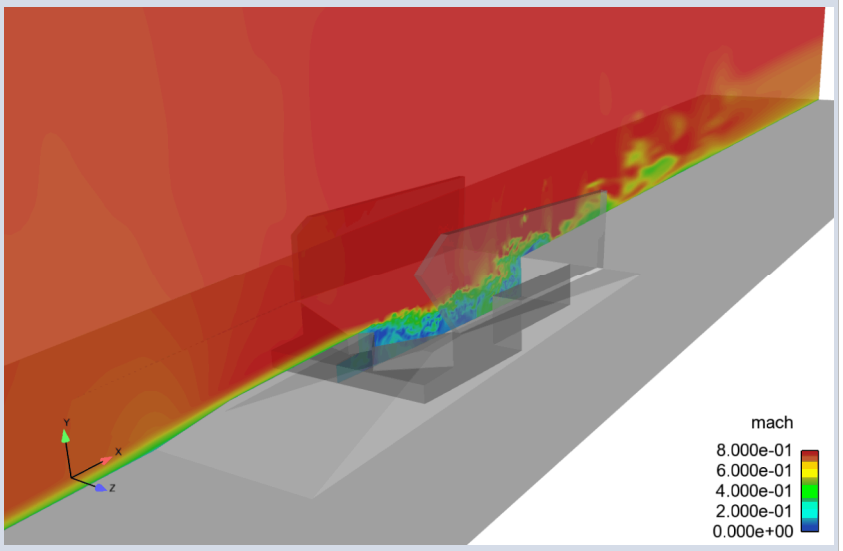
SAND2015-7417PE

Tracking# (SAND, PR) _____

- B61-12 component environment specifications for captive carriage currently rely on computational simulation.
- Validation simulations are used to quantify model errors for production level simulations supporting the B61-12 LEP.

Principal Investigator / Lab: **Matt Barone / SNL**
Code / Platform: **SIGMA-CFD / Sequoia**
Usage: **1.8 Sequoia-days**

Complex Cavity Validation Simulation



Instantaneous Mach number contours visualizing the turbulent flow within a cavity with complex geometry including doors.

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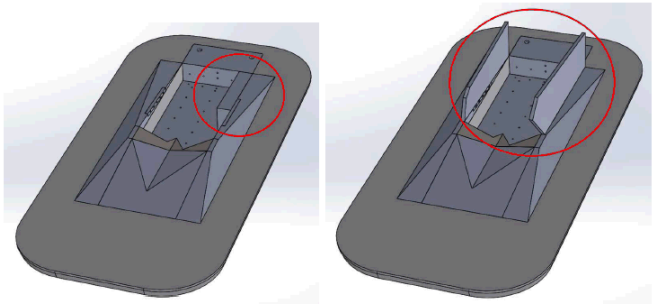
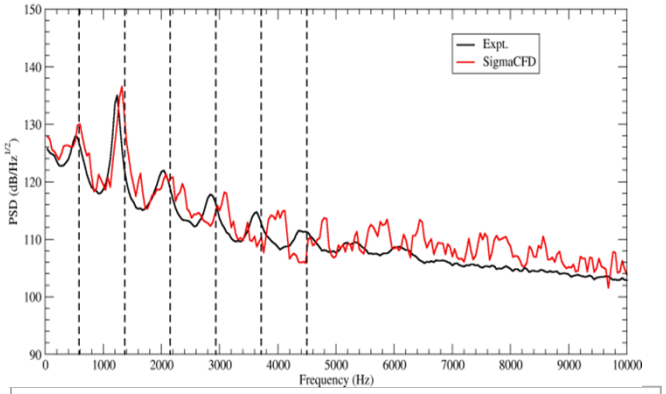
- **CCC8 Accomplishments**
  - Completed simulations for four complex cavity geometries
    - A. Baseline rectangular cavity
    - B. Case A + ramp & scoop
    - C. Case B + internal box
    - D. Case C + doors
  - Completed assessment of wind tunnel wall boundary condition (porous vs solid wall) effects on the results.
- **Impact:**
  - Validation results from these studies add to our existing library of validation results, allowing improved model error estimates for full production run captive carriage simulations.

Validation of captive carriage aerodynamic loading environment predictions..



Example experimental complex cavity configurations.



Comparison of experimental and predicted wall pressure spectra.