Introduction of First Low Boom Prediction Workshop

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Overview

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- Requirements
- Models
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- Communication
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Background (1/3)

• Restriction on supersonic flight over land due to the sonic boom
• Concorde was last commercial supersonic airplane
  – Not commercially viable due to restriction on supersonic flight over land
  – Introduced in 1976
  – Retired in 2003
Renewed interest in supersonic research to minimize sonic boom
Recent studies heavily rely on CFD

Formalized workshops to assess state of the art of CFD for drag and high lift prediction via AIAA

First known effort to assess state of the art of CFD for low boom validation is Sonic Boom Prediction Workshop at NASA FAP 2008
  - Limited to NASA participants
  - Primarily NASA codes
Workshop Logistics

• Location:
  AIAA SciTech Conference (1/13 - 1/17)
  Gaylord National
  National Harbor, Maryland

• Date:
  Saturday, January 11, 2014
Workshop Objective

• Assess the state of the art for predicting near-field pressure signatures needed for accurate and reliable sonic boom prediction.

• STEP files and Euler unstructured and structured meshes will be provided.

• Wind tunnel data will be provided in ASCII format.
Requirements

• Compare CFD to experimental data to two models on provided Euler meshes at two different distances below the aircraft

Optional:

• Compare CFD to third model
• Code to code comparisons to farther H/L’s
• User developed Euler and/or viscous meshes
Required Models

• Boeing BOR
  – Tested @ NASA Ames 9’ x 7’
  – 8” long

• 69° delta-wing body
  – Original tested in 70
  – Re-tested in 2012
  – 17.52” long
Optional Model

• Lockheed Martin full aircraft configuration
  – Tested @ NASA Ames 9’ x 7’
  – 22.396” long
Wind Tunnel Data for Required Models

- Boeing BOR
  - 3 heights below model
  - Mach = 1.6

- 69° delta-wing body
  - 3 heights below model
  - Mach = 1.7
  - 3 angle of attacks
  - 3 off track angles
Wind Tunnel Data for Optional Model

- Lockheed Martin full aircraft configuration
  - 7 heights below model
  - Mach = 1.6
  - 2 angle of attacks
  - 6 off track angles
Communications

• Website, Email Lists, and FTP Server
  – Website:  
    http://lbpw.larc.nasa.gov
  – Participants Email List:  
    aiaa-boompw-participant@lists.nasa.gov
  – FTP Server:  
    lbpw-ftp.larc.nasa.gov
Questions