Introduction of First Low Boom Prediction Workshop

Kenrick Waithe
Grapevine, TX
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Overview

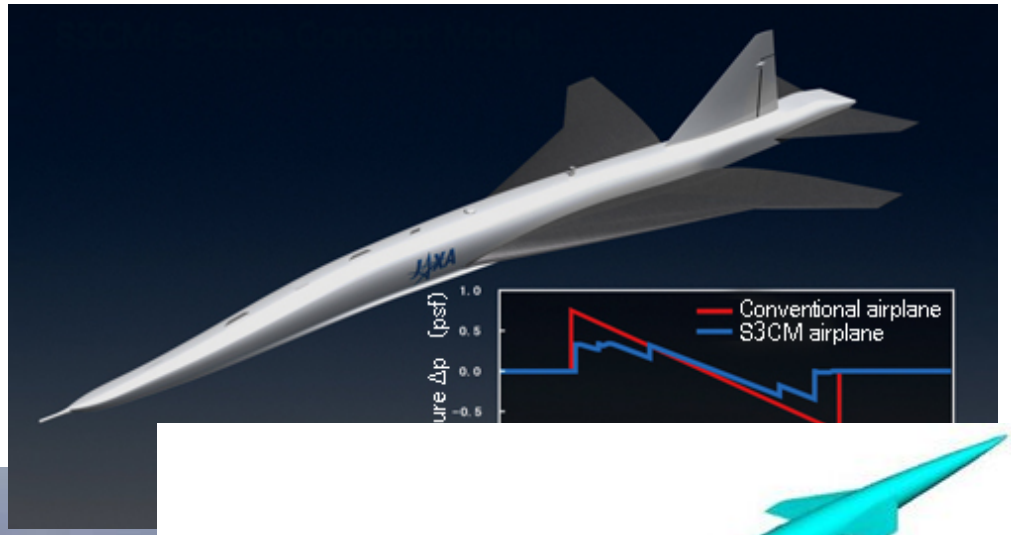
- Background
- Workshop Logistics
- Objective
- Requirements
- Models
- Wind Tunnel Data
- Communication
- Questions

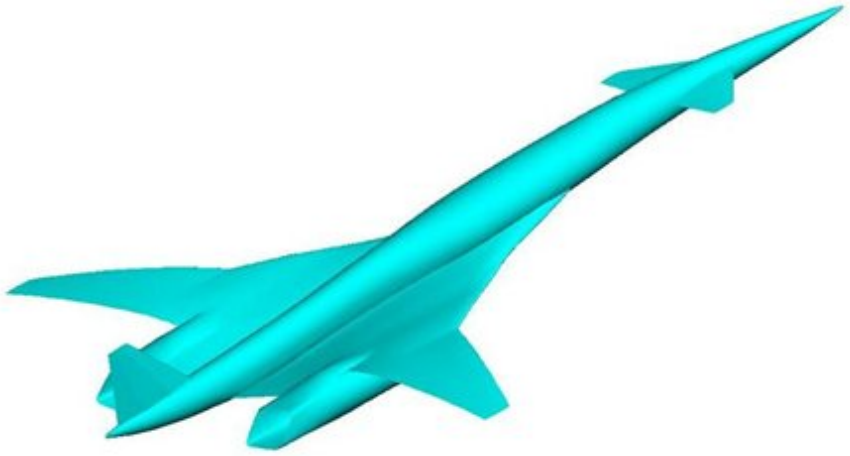
Background (1/3)

- 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

Background (2/3)

- Renewed interest in supersonic research to minimize sonic boom





Background (3/3)

- 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

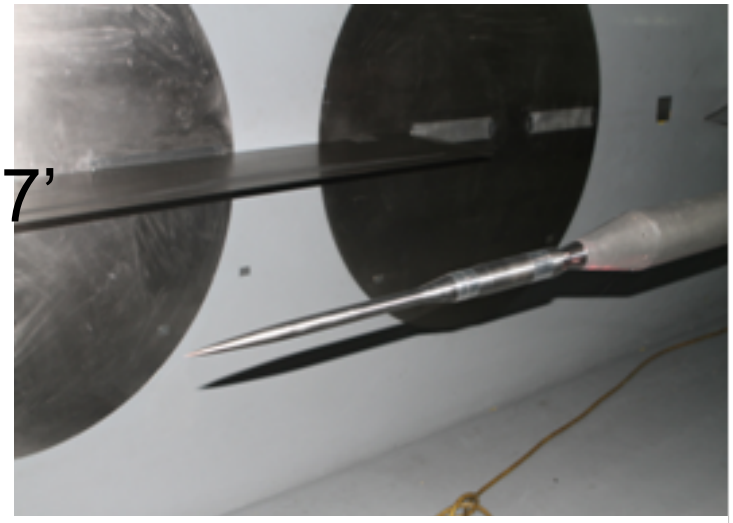
- *Compare CFD to experimental data to two models on provided Euler meshes at two different distances below the aircraft*

Optional:

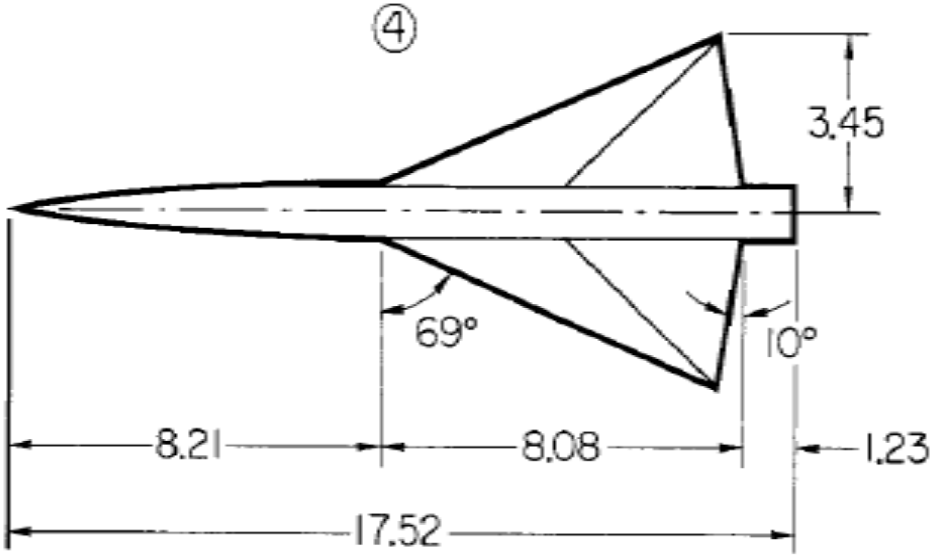
- Compare CFD to third model
- Code to code comparisons to farther H/L's
- User developed Euler and/or viscous meshes

Required Models

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

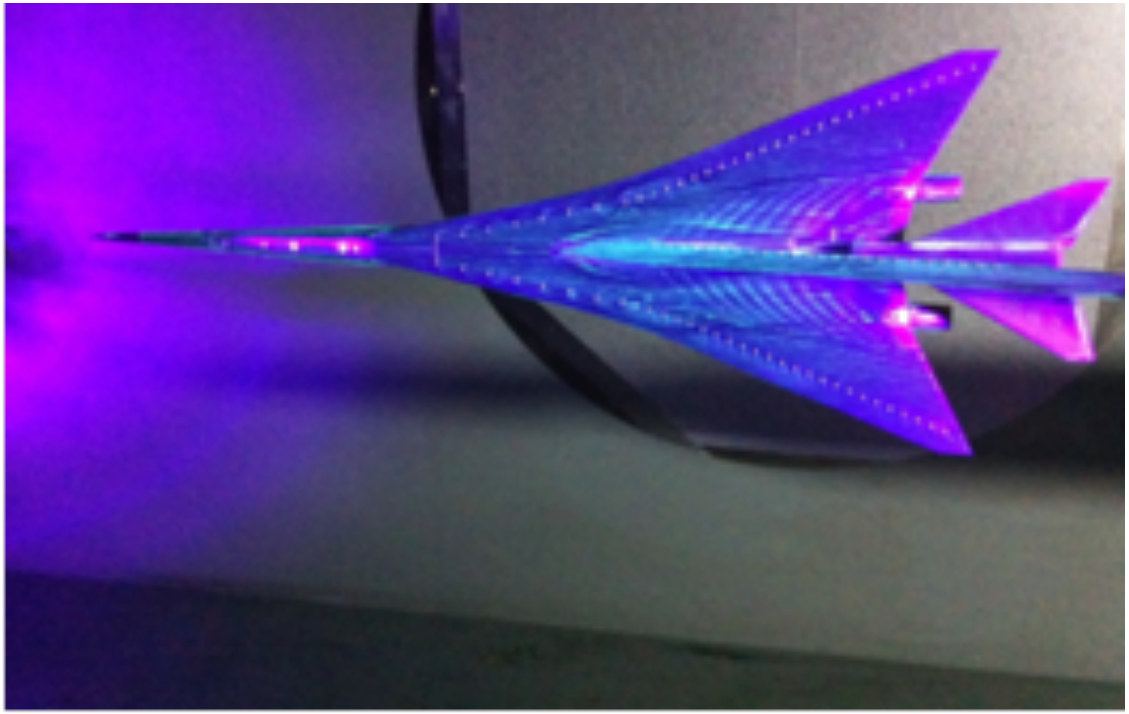


- 69° delta-wing body
  - Original tested in 70
  - Re-tested in 2012
  - 17.52” long



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