1st AIAA CFD High Lift Prediction Workshop Official Test Cases

Please check the website (<u>http://hiliftpw.larc.nasa.gov</u>) periodically for updates, and/or register with <u>hiliftpw@gmail.com</u> to be notified directly.

Test Cases: NASA Trapezoidal (Trap) Wing Model

For the required test cases, participants are asked to run on at least one supplied series of grids (if possible).

Case 1 (REQUIRED) – Grid Convergence Study

Trap Wing "Config 1" – Slat 30, Flap 25 (full span)

Flow solutions on a series of increasingly refined grids are required to assess grid convergence. If desired, participants can also run on independently-generated grids (built to specifications described in the Gridding Guidelines). Flow solutions on the **coarse, medium, and fine mesh are required**. An additional extra-fine mesh flow solution is optional.

Mach=0.2 Alpha= 13°, 28° Reynolds Number = 4.3M based on mean aerodynamic chord (MAC) Reference Temperature = 520 °R

Case 2 (REQUIRED) – Flap Deflection Prediction Study

Medium Mesh from Grid Convergence Study

- a) Trap Wing "Config 1" Slat 30, Flap 25
- b) Trap Wing "Config 8" Slat 30, Flap 20

Mach=0.2 Alpha= 6°, 13°, 21°, 28°, 32°, 34°, 37° Reynolds Number = 4.3M based on MAC Reference Temperature = 520°R

Case 3 (OPTIONAL) – Flap and Slat Support Effects Study

Trap Wing "Config 1" – Slat 30, Flap 25 with flap and slat bracket geometry modeled (nominally using **medium** mesh grid system)

Mach=0.2 Alpha= 13°, 28° Reynolds Number = 4.3M based on MAC Reference Temperature = 520°R

NOTES:

- 1. All simulations are "free air"; no wind tunnel walls or model support systems are to be included.
- 2. Boundary layer is to be modeled as fully turbulent.