AIAA CFD Drag Prediction Workshop II
June 2003, Orlando, FL

Required Cases

1. Single point grid convergence study
   - Mach = 0.75, Reynolds Number = $3x10^6$ (Based on c=141.2 mm)
   - Lift Coefficient = .500 ± .001
   - "Fully turbulent" solution
   - Six solutions – coarse, medium, and fine grids for wing-body and wing-body-pylon-nacelle

2. Drag Polar
   - Mach = 0.75, Reynolds Number = $3x10^6$ (Based on c=141.2 mm)
   - Angle of Attack (Deg) = -3°, -2°, -1.5°, -1°,0°, 1°, 1.5°
   - Boundary layer transition
     - Lower surface: 25% chord
     - Upper surface: 5% at root, 15% at kink, 15% at η=0.844, 5% at tip
       OR
       10% if you cannot vary the trip location
     - "fully turbulent" if you cannot specify a trip location
   - Wing-body and wing-body-pylon-nacelle
   - Medium grid from case #1 or your own "best practices" grid.

Optional Cases

3. Comparison of "tripped" and "fully turbulent" solutions (optional but strongly encouraged)
   - Mach = 0.75 Reynolds Number = $3x10^6$ (Based on c=141.2 mm)
   - Lift Coefficient = .500 ± .001
   - Trip location as per case #2
   - Wing-body and wing-body-pylon-nacelle
   - Medium grid from case #1 or your own "best practices" grid.
     If you do not use the grid from case #1 you also need to run the "fully turbulent" solution on your grid.

4. Drag Rise (very optional)
   - Mach = 0.50, 0.60, 0.70, 0.72, 0.74, 0.75, 0.76, 0.77
   - Lift Coefficient = 0.500 ± .001
   - Trip location as per case #2
   - Wing-body and wing-body-pylon-nacelle

Notes:

- In the interest of improving the statistical analysis with the data from case #1, we would like all of these runs to be made "fully turbulent".
- For cases 2-4, we would like you to match the transition location as best as possible (the wing lower surface is tripped at 25% chord, the upper surface varies spanwise - wing root: x/c = 5%, kink x/c = 15%, eta = 0.844 x/c = 15%, tip x/c 5%). If you are not able to stair-step the transition spanwise, use a constant 10% transition on the upper surface. Use "fully turbulent" if you are not able to specify a transition location.
- Case #3 has changed to provide comparison data between "fully turbulent" and "tripped" solutions. We would like these to be compared on the same grid, so if you use a grid other than that used in case #1, also provide a "fully turbulent" solution on your grid.
- It is not expected that many people will do optional case #4 due to the large amount of effort required for case #1.
- Simulations are to be “free air”; no wind tunnel walls or model suport systems are to be included.