Test Case 2a: Wing/Body Cruise

- **Verification of steady CFD analysis, required**
- **Settings**
  - Steady CFD RANS **French Vanilla SA-[neg] (All terms!)**
    - Adiabatic Wall (not isothermal)
  - Converge residuals to machine precision (~1e-10)
- **Grids: *https://dpw.larc.nasa.gov/DPW8/Scatter/Test_Case_2***
  - NASA CRM geometry including deformed wing matching condition
    - (L1:**T**iny/L2:**C**oarse/L3:**M**edium/L4:**F**ine/L5:e**X**tra-fine/L6:**U**ltra-fine)
    - Six-member grid family; four are required, six are desirable
  - Encourage use of committee-supplied grids; user-generated grids are acceptable

Comparison Data
NTF197: r44,r51,r53
NTF215: r43,r103
NTF229: r296,r300,r302
Ames216: r35,r126,r130,r133

- **Reference Units**

Sref (semi-span grid)	Cref	Semispan	Moment Center
297360.0 sq.in	275.8 in	1156.75 in	(1325.90, 0.00, 177.95)

Revision History:
v2: Cref (278.5in → 275.8in)
v3: T_{static} (120° F → 100 ° F)

- **Conditions**

Mach	Re_c	α	T_{static} (100° F)	γ	Pr	Pr_t	Farfield $\chi = \tilde{\nu}/\nu$
0.85	5×10^6	2.50°	559.67 R | 310.928 K	1.4	0.72	0.90	3

- **Sutherland's Law**

$$\mu(T) = \mu_0 \left(\frac{T}{T_0}\right)^{3/2} \left(\frac{T_0 + S}{T + S}\right) \quad \mu_0 = 1.716 \times 10^{-5} \frac{\text{kg}}{m\ s} \quad T_0 = 491.6°\ R \quad S = 198.6°\ R \quad \frac{\mu(T)}{\mu_{ref}} = \left(\frac{T}{T_{ref}}\right)^{3/2} \left(\frac{1 + S/T_{fef}}{T/T_{fef} + S/T_{fef}}\right)$$