Loads

- **LE2 - Certification Standards.**

Loads

- **LE2 - Certification Standards.**
  - The certification basis of the A300-600R model are provided in the Airbus document AI/V-C 600/78 Issue 9 dated November 1994.
  - The applicable Requirements are:
    - **FAR part 25** (applicable amendments defined in the above document, basically amd. 44).
    - **Complementary Conditions** (CC - see document above).
      - Note: Complementary Conditions are established to complete the actual requirements by conditions deemed necessary by the Authorities at time of airplane design and certification.
  - As far as vertical tail loads are concerned, the following Complementary Conditions are of interest:

Loads

- **LE2 - Certification Standards**
  - "CC5-1 DESIGN MANOEUVRE CONDITION

A - GENERAL

Add to paragraph FAR 25-331 (a):

The manufacturer will carry out a rational analysis of the specified manoeuvres taking into account the effects of flexibility. Under no circumstances is it necessary for the speed of deflection of the control surfaces to exceed the maximum speed permitted by the servo controls, with control surfaces under appropriate aerodynamic load.

Loads

- **LE2 - Certification Standards**
  - "CC5-1 DESIGN MANOEUVRE CONDITION (cont'd)

C – YAW MANOEUVRE

Add to paragraph FAR 25.351 (a):

The deflection of the control surface should correspond to the smallest angle corresponding to:

maximum travel compatible with the stops

maximum power of the servo controls

maximum pilot effort of 300 lbs

Yaw manoeuvres must be analysed for all speeds between V_{MC} and V_D."

Loads

- LE2 - Certification Standards

CC6 “DESIGN GUST CONDITIONS

1) Add to §25-341(a) (1):

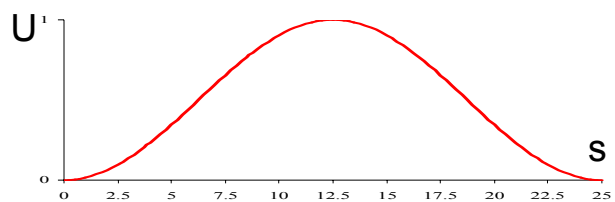
The values for gust speeds indicated for V_B also apply for the recommended speed in turbulent air shown in the flight manual.

2) Add to § 25-341 (c) and 25-351:

Instead of the method indicated above the following method may be applied at the request of the certification authorities:

Taking into account the aeroelastic and dynamic effects of flexibility, the most unfavourable response of the flexible aircraft will be calculated for an isolated gust.

$$U = \frac{Ude}{2}(1 - \cos\frac{2\pi.s}{So})$$



Ude is defined in paragraph FAR 25-341 (a)

s is the penetration distance into the gust

So is the wavelength of the gust which will be made to vary between the limits fixed in agreement with the certification authorities

Loads

- LE2 - Certification Standards

CC6 “DESIGN GUST CONDITIONS (cont’d)

3) Additional studies:

Add to § Far 25-305:

A study of the behaviour of the aircraft in continuous turbulence should be made.”

Loads

- **Vertical tail loads - The conditions (A300-600R)**

Conditions related to the establishment of the vertical tail loads:

- the yawing maneuver resulting from a rudder displacement condition
  - §25.351(a).
  - Complementary condition CC5-1 C:
    - Yaw maneuver must be analysed for all speed between VMC and VD.
- the lateral gust resulting from the airplane encountering an external atmospheric perturbation
  - §25.351(b).
  - Complementary conditions CC6 Design Gust Conditions:
    - Discrete tuned gust taking into account the aeroelastic and dynamic effects of the airframe flexibility.
    - Study of the behavior of the aircraft in continuous turbulence.
- the engine failure (loss of thrust) and associated pilot corrective action
  - §25.367
- the potential systems failures, with particular focus on flight control systems.