

applied to all limit load conditions specified in subpart C.

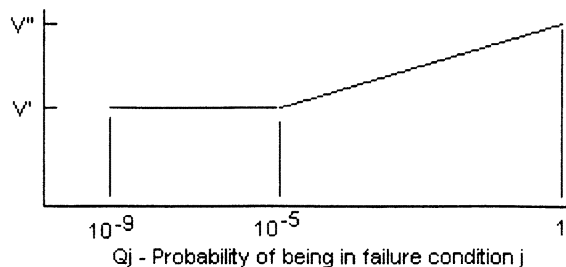
(iii) For residual strength substantiation, the airplane must be able to withstand two thirds of the ultimate

loads defined in paragraph 2.(b)(2)(ii) above.

(iv) If the loads induced by the failure condition have a significant effect on fatigue or damage tolerance, then their effects must be taken into account.

(v) Freedom from aeroelastic instability must be shown up to a speed determined from Figure 3. Flutter clearance speeds VI and VII may be based on the speed limitation specified for the remainder of the flight using the margins defined by § 25.629(b).

Figure 3
Clearance speed



VI = Clearance speed as defined by § 25.629(b)(2).

VII = Clearance speed as defined by § 25.629(b)(1).

$Q_j = (T_j)(P_j)$ where:

T_j = Average time spent in failure condition j (in hours).

P_j = Probability of occurrence of failure mode j (per hour).

Note: If P_j is greater than 10^{-3} per flight hour, then the flutter clearance speed must not be less than VII.

(vi) Freedom from aeroelastic instability must also be shown up to VI in Figure 3 above for any probable system failure condition combined with any damage required or selected for investigation by § 25.571(b).

(3) Consideration of certain failure conditions may be required by other sections of 14 CFR part 25, regardless of calculated system reliability. Where analysis shows the probability of these failure conditions to be less than 10^{-9} , criteria other than those specified in this paragraph may be used for structural substantiation to show continued safe flight and landing.

c. Warning considerations. For system failure detection and warning, the following apply:

(1) The system must be checked for failure conditions, not extremely improbable, that degrade the structural capability below the level required by 14 CFR part 25, or significantly reduce the reliability of the remaining system. The flightcrew must be made aware of these failures before flight. Certain elements of the control system, such as mechanical and hydraulic components, may use special periodic inspections,

and electronic components may use daily checks, in lieu of warning systems, to achieve the objective of this requirement. These certification maintenance requirements must be limited to components that are not readily detectable by normal warning systems and where service history shows that inspections will provide an adequate level of safety.

(2) The existence of any failure condition, not extremely improbable, during flight that could significantly affect the structural capability of the airplane, and for which the associated reduction in airworthiness can be minimized by suitable flight limitations, must be signaled to the flightcrew. For example, failure conditions that result in a factor of safety between the airplane strength and the loads of 14 CFR part 25, subpart C below 1.25, or flutter margins below VII, must be signaled to the crew during flight.

d. Dispatch with known failure conditions. If the airplane is to be dispatched in a known system failure condition that affects structural performance, or affects the reliability of the remaining system to maintain structural performance, then the provisions of these special conditions must be met for the dispatched condition and for subsequent failures. Flight limitations and expected operational limitations may be taken into account in establishing Q_j as the combined probability of being in the dispatched failure condition and the subsequent failure condition for the safety margins in Figures 2 and 3. These limitations must be such that the

probability of being in this combined failure state and then subsequently encountering limit load conditions is extremely improbable. No reduction in these safety margins is allowed if the subsequent system failure rate is greater than 10^{-3} per hour.

Issued in Renton, Washington, on April 10, 2003.

Ali Bahrami,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

[FR Doc. 03-10044 Filed 4-22-03; 8:45 am]

BILLING CODE 4910-13-P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2003-NM-15-AD; Amendment 39-13124; AD 2003-08-11]

RIN 2120-AA64

Airworthiness Directives; Boeing Model 747-100, -200B, -200F, -200C, -100B, -300, -100B SUD, -400, -400D, and -400F Series Airplanes; and Model 747SR Series Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule; request for comments.

SUMMARY: This amendment adopts a new airworthiness directive (AD) that is applicable to all Boeing Model 747-100, -200B, -200F, -200C, -100B, -300, -100B SUD, -400, -400D, and -400F series airplanes; and Model 747SR