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IN REPLY, REFER TO:  
L390-04-3921

Federal Aviation Administration  
Transport Airplane Directorate, Aircraft Certification Service  
Airplane and Flight Crew Interface Branch (ANM-111)  
1601 Lind Avenue SW.  
Renton, Washington 98055-4056

ATTENTION: Mr. Gregg Bartley

FAA-2004-18775-6

SUBJECT: Comments to NPRM, Docket Number FAA-2004-18775, Safety Standards for Flight Guidance

Dear Mr. Bartley:

Cessna offers the attached comments to the NPRM.

Cessna appreciates the opportunity to comment on the proposed NPRM.

Sincerely,

CESSNA AIRCRAFT COMPANY

Larry Van Dyke  
Director of Airworthiness and Product Safety

cc: David Brant

attachment

## Cessna Aircraft Company Comments:

### Title: Safety Standards for Flight Guidance Systems and Proposed Revisions to Advisory Circular 25-1329-1A, Automatic Pilot Systems Approval; Proposed Rule and Notice

1. Cessna recommends that a list of definitions be included.
2. Cessna suggests that the FAA define failure conditions level of severity (Page 129). The use of ACJ 25.1329 for baseline is suggested:

#### **Failure Conditions**

1. Any Failure Condition occurring within the normal flight envelope should be assessed as Extremely Improbable if its effect is one of the following:
  - a. A load on any part of the primary structure sufficient to cause a catastrophic structural failure;
  - b. Catastrophic loss of flight path control;
  - c. Exceedance of VDF/MDF; or
  - d. Catastrophic flutter or vibration.
2. Any Failure Condition occurring within the normal flight envelope should be assessed as Extremely Remote if its effect is one of the following:
  - a. A load on any part of the structure greater than its limit load;
  - b. Exceedance of an airspeed halfway between VMO and VDF or a Mach number halfway between MMO and MDF;
  - c. A stall;
  - d. A normal acceleration less than a value of 0 g;
  - e. Bank angles of more than 60° en route or more than 30° below a height of 1 000 ft (304.8 m). If the MUH is below 100 ft, the bank angle exceedance limit should be reduced to a value which takes account of the size of the aeroplane and its handling characteristics;
  - f. Hazardous degradation of the flying qualities of the aeroplane;
  - g. Hazardous height loss in relation to minimum permitted height for automatic pilot use ;  
or
  - h. Engagement or disengagement of a mode leading to hazardous consequences.
3. The AC does not adequately address requirements of RTCA documents DO-160(), DO-178() or DO-254() with respect to installation or system evaluation.
4. JAA ACJ 25.1329 is very well written, precise in content and understanding. Cessna recommends the FAA use the complete ACJ.

### Cessna Aircraft Company Comments:

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- 5. The material lacks detail in defining test conditions and expected results for all flight phases. The reader would expect to see a typical airplane flight envelope and references to malfunction testing at various points in the envelope from 1.2Vs to Vmo/Mmo and at Vref/Vle/Vfe etc as in the following typical flight envelope:

