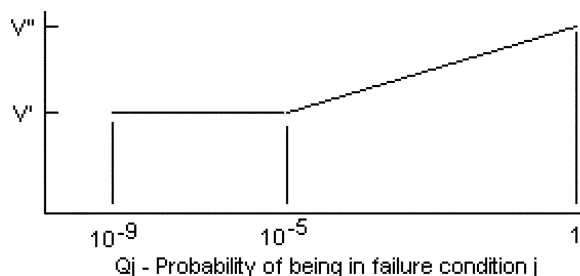


based on the speed limitation specified for the remainder of the flight using the margins defined by § 25.629(b).

Figure 3

Clearance speed



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

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

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

Q_j = Probability of being in failure condition j

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 V'' .

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

(c) 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.

4. *Failure indications.* For system failure detection and indication, the following apply:

(a) The system must be checked for failure conditions, not extremely improbable, that degrade the structural capability below the level required by part 25 or significantly reduce the reliability of the remaining system. As far as reasonably practicable, the flight crew 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 detection and

indication systems to achieve the objective of this requirement. These certification maintenance requirements must be limited to components that are not readily detectable by normal detection and indication systems, and where service history shows that inspections will provide an adequate level of safety.

(b) 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 flight crew. For example, failure conditions that result in a factor of safety between the airplane strength and the loads of Subpart C below 1.25, or flutter margins below V'' , must be signaled to the crew during flight.

5. *Dispatch with known failure conditions.* If the airplane is to be dispatched in a known system failure condition that affects structural performance, or that affects the reliability of the remaining system to maintain structural performance, then the provisions of this proposed special condition must be met, including the provisions of paragraph B.2 for the dispatched condition and paragraph B.3 for subsequent failures. Expected operational limitations may be taken into account in establishing P_j as the probability of failure occurrence for determining the safety margin in Figure 1. 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 $1E-3$ per hour.

Issued in Renton, Washington, on February 3, 2011.

Jeffrey E. Duven,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

[FR Doc. 2011-3215 Filed 2-11-11; 8:45 am]

BILLING CODE 4910-13-P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. NM441 Special Conditions No. 25-11-01-SC]

Special Conditions: Gulfstream Model GVI Airplane; Design Roll Maneuver Requirement for Electronic Flight Controls

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This action proposes special conditions for the Gulfstream GVI airplane. This airplane will have novel or unusual design features when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. These design features include an electronic flight control system that provides roll control of the airplane through pilot inputs to the flight

computers. These proposed special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: We must receive your comments by March 31, 2011.

ADDRESSES: You must mail two copies of your comments to: Federal Aviation Administration, Transport Airplane Directorate, Attn: Rules Docket (ANM-113), Docket No. NM441, 1601 Lind Avenue, SW., Renton, Washington 98057-3356. You may deliver two copies to the Transport Airplane Directorate at the above address. You must mark your comments: Docket No. NM441. You can inspect comments in the Rules Docket weekdays, except Federal holidays, between 7:30 a.m. and 4 p.m.

FOR FURTHER INFORMATION CONTACT: Carl Niedermeyer, FAA, Airframe/Cabin Safety Branch, ANM-115, Transport Standards Staff, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 227-2279; facsimile (425) 227-1320.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data. We ask that you send us two copies of written comments.

We will file in the docket all comments we receive, as well as a report summarizing each substantive public contact with FAA personnel concerning these special conditions. You can inspect the docket before and after the comment closing date. If you wish to review the docket in person, go to the address in the **ADDRESSES** section of this preamble between 7:30 a.m. and 4 p.m., Monday through Friday, except Federal holidays.

We will consider all comments we receive on or before the closing date for comments. We will consider comments filed late if it is possible to do so without incurring expense or delay. We may change these special conditions based on the comments we receive.

If you want us to acknowledge receipt of your comments on this proposal, include with your comments a self-addressed, stamped postcard on which you have written the docket number.

We will stamp the date on the postcard and mail it back to you.

Background

On March 29, 2005, Gulfstream Aerospace Corporation (hereafter referred to as “Gulfstream”) applied for an FAA type certificate for its new Gulfstream Model GVI passenger airplane. Gulfstream later applied for, and was granted, an extension of time for the type certificate, which changed the effective application date to September 28, 2006. The Gulfstream Model GVI airplane will be an all-new, two-engine jet transport airplane with an executive cabin interior. The maximum takeoff weight will be 99,600 pounds, with a maximum passenger count of 19 passengers.

Type Certification Basis

Under provisions of Title 14, Code of Federal Regulations (14 CFR) 21.17, Gulfstream must show that the Gulfstream Model GVI airplane (hereafter referred to as “the GVI”) meets the applicable provisions of 14 CFR part 25, as amended by Amendments 25-1 through 25-119, 25-122, and 25-124. If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for the GVI because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

In addition to complying with the applicable airworthiness regulations and special conditions, the GVI must comply with the fuel vent and exhaust emission requirements of 14 CFR part 34 and the noise certification requirements of 14 CFR part 36. The FAA must also issue a finding of regulatory adequacy pursuant to section 611 of Public Law 92-574, the “Noise Control Act of 1972.”

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.17(a)(2).

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design features, the special conditions would also apply to the other model under provisions of § 21.101.

Novel or Unusual Design Features

The GVI is equipped with an electronic flight control system that provides roll control of the airplane through pilot inputs to the flight

computers. The current design roll maneuver requirement for structural loads in 14 CFR part 25 is inadequate for addressing an airplane with electronic flight controls that affect maneuvering. Special conditions are proposed to take into account the effects of an electronic flight control system.

Discussion of Proposed Special Conditions

The GVI is equipped with an electronic flight control system that provides roll control of the airplane through pilot inputs to the flight computers. Current part 25 airworthiness regulations account for “control laws” for which aileron deflection is proportional to control wheel deflection. They do not address any nonlinearities¹ or other effects on aileron and spoiler actuation that may be caused by electronic flight controls. Therefore, the FAA considers the flight control system to be a novel and unusual feature compared to those envisioned when the current regulations were adopted. Since this type of system may affect flight loads, and therefore the structural capability of the airplane, special conditions are needed to address these effects.

These proposed special conditions differ from current requirements in that the special conditions require that the roll maneuver result from defined movements of the cockpit roll control as opposed to defined aileron deflections. Also, these proposed special conditions require an additional load condition at design maneuvering speed (V_A), in which the cockpit roll control is returned to neutral following the initial roll input.

Applicability

As discussed above, these proposed special conditions are applicable to the GVI. Should Gulfstream apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design features, these proposed special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features of the GVI. It is not a rule of general applicability.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

¹ A nonlinearity is a situation where output does not change in the same proportion as input.

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Proposed Special Conditions

Accordingly, the Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for the GVI airplanes.

In lieu of compliance with § 25.349(a), Gulfstream must comply with the following special conditions.

The following conditions, speeds, and cockpit roll control motions (except as the motions may be limited by pilot effort) must be considered in combination with an airplane load factor of zero and of two-thirds of the positive maneuvering factor used in design. In determining the resulting control surface deflections, the torsional flexibility of the wing must be considered in accordance with § 25.301(b):

1. Conditions corresponding to steady rolling velocities must be investigated. In addition, conditions corresponding to maximum angular acceleration must be investigated for airplanes with engines or other weight concentrations outboard of the fuselage. For the angular acceleration conditions, zero rolling velocity may be assumed in the absence of a rational time history investigation of the maneuver.

2. At V_A , sudden movement of the cockpit roll control up to the limit is assumed. The position of the cockpit roll control must be maintained until a steady roll rate is achieved and then must be returned suddenly to the neutral position.

3. At V_C , the cockpit roll control must be moved suddenly and maintained so as to achieve a roll rate not less than that obtained in paragraph 2.

4. At V_D , the cockpit roll control must be moved suddenly and maintained so as to achieve a roll rate not less than one third of that obtained in paragraph 2.

Issued in Renton, Washington, on February 3, 2011.

Ali Bahrami,

*Manager, Transport Airplane Directorate,
Aircraft Certification Service.*

[FR Doc. 2011-3216 Filed 2-11-11; 8:45 am]

BILLING CODE 4910-13-P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 33

[Docket No. NE130; Notice No. 33-10-01-SC]

Special Conditions: Pratt and Whitney Canada Model PW210S Turboshaft Engine

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This action proposes special conditions for the Pratt and Whitney Canada (PWC) model PW210S turboshaft engine. This engine model will have a novel or unusual design feature associated with engine operation in auxiliary power unit (APU) mode. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These proposed special conditions contain the added safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: We must receive your comments by March 16, 2011.

ADDRESSES: You must mail two copies of your comments to: Federal Aviation Administration, Engine and Propeller Directorate, *Attn:* Marc Bouthillier, Rules Docket (ANE-111), Docket No. NE130, 12 New England Executive Park, Burlington, Massachusetts 01803-5299. You may deliver two copies to the Engine and Propeller Directorate at the above address. You must mark your comments: Docket No. NE130. You can inspect comments in the Rules Docket weekdays, except Federal holidays, between 7:30 am. and 4 p.m.

FOR FURTHER INFORMATION CONTACT: For technical questions concerning this proposed rule contact Marc Bouthillier, ANE-111, Engine and Propeller Directorate, Aircraft Certification Service, 12 New England Executive Park, Burlington, Massachusetts 01803-5299, telephone (781) 238-7120; facsimile (781) 238-7199; e-mail marc.bouthillier@faa.gov. For legal questions concerning this proposed rule contact Vincent Bennett, ANE-7 Engine and Propeller Directorate, Aircraft Certification Service, 12 New England Executive Park, Burlington, Massachusetts 01803-5299; telephone (781) 238-7044; facsimile (781) 238-7055; e-mail vincent.bennett@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data. We ask that you send us two copies of written comments.

We will file in the docket all comments we receive, as well as a report summarizing each substantive public contact with FAA personnel about these special conditions. You can inspect the docket before and after the comment closing date. If you wish to review the docket in person, go to the address in the **ADDRESSES** section of this preamble between 9 am. and 5 p.m., Monday through Friday, except Federal holidays.

We will consider all comments we receive by the closing date for comments. We will consider comments filed late if it is possible to do so without incurring expense or delay. We may change these special conditions based on the comments we receive.

If you want us to let you know we received your comments on this proposal, send us a pre-addressed, stamped postcard on which the docket number appears. We will stamp the date on the postcard and mail it back to you.

Background

On December 5, 2005, PWC applied for a type certificate for the model PW210S turboshaft engine. The engine is a free turbine turboshaft designed for a transport category helicopter. This engine incorporates a two stage compressor driven by a single stage turbine and a two stage free power turbine driving a two stage reduction gearbox and main output shaft. The control system includes a dual channel digital electronic control. The engine will incorporate a novel or unusual design feature associated with engine operation in auxiliary power unit (APU) mode. The helicopter will incorporate a main rotor brake what will allow the engine main output shaft and power turbine to be brought to a stop and to remain stationary, while the gas generator portion of the engine continues to operate as an APU while on the ground.

The applicable airworthiness standards do not contain adequate or appropriate airworthiness standards to address this design feature.

These special conditions contain the additional airworthiness standards necessary to establish a level of safety equivalent to the level that would result