

[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. NM461; Special Conditions No. 25-440-SC]

Special Conditions: Gulfstream Aerospace LP (GALP) Model G250 airplane, Design Roll-Maneuver Requirement.

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for the Gulfstream Aerospace LP (GALP) Model G250 airplane. This airplane will have novel or unusual design features associated with electronic flight controls as they relate to design roll-maneuver requirements. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These 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: The effective date of these special conditions is July 1, 2011. We must receive your comments by August 29, 2011.

ADDRESSES: You must mail two copies of your comments to: Federal Aviation Administration, Transport Airplane Directorate, Attn: Rules Docket (ANM-113), Docket No. NM461, 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. NM461. You can inspect comments in the Rules Docket weekdays, except Federal holidays, between 7:30 a.m. and 4:00 p.m.

FOR FURTHER INFORMATION CONTACT: Carl Niedermeyer, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98057-3356; telephone (425) 227-2279; facsimile (425) 227-1149.

SUPPLEMENTARY INFORMATION:

The FAA has determined that notice of, and opportunity for prior public comment on, these special conditions are impracticable because these procedures would significantly delay issuance of the design approval and thus delivery of the affected aircraft. In addition, the substance of these special conditions has been subject to the public-comment process in several prior instances with no substantive comments received. The FAA therefore finds that good cause exists for making these special conditions effective upon issuance.

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 7:30 a.m. and 4:00 p.m., Monday through Friday, except Federal holidays.

We will consider all comments we receive by the closing date for comments. We may change these special conditions based on the comments we receive.

If you want us to acknowledge receipt of your comments on these special conditions, 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 30, 2006, GALP applied for a type certificate for their new Model G250 airplane. The G250 is an 8-10 passenger (19 maximum), twin-engine airplane with a maximum operating altitude of 45,000 feet and a range of approximately 3,400 nautical miles. Airplane dimensions are 61.69-foot wing span, 66.6-foot overall length, and 20.8-foot tail height. Maximum takeoff weight is 39,600 pounds and maximum landing weight 32,700 pounds. Maximum cruise speed is mach 0.85, dive speed is mach 0.92. The avionics suite will be the Rockwell Collins Pro Line Fusion.

Type Certification Basis

Under the provisions of 14 CFR 21.17, GALP must show that the Model G250 airplane meets the applicable provisions of part 25 as amended by Amendments 25-1 through 25-117.

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 Model G250 airplane because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

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 feature, the special conditions would also apply to the other model.

In addition to the applicable airworthiness regulations and special conditions, the Model G250 airplane 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; and the FAA must issue a finding of regulatory adequacy under § 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).

Novel or Unusual Design Features

The Model G250 airplane will incorporate the following novel or unusual design features:

The Model G250 airplane is equipped with an electronic flight control system that provides control through the pilot inputs to the flight computer. This novel design feature is not covered in the current roll-maneuver airworthiness regulations of § 25.349(a). The current regulations do not address any nonlinearities or other effects upon roll control that may be caused by electronic flight controls. Therefore, special conditions are necessary to establish appropriate design standards for the GALP Model G250 airplane type design.

Discussion

The GALP Model G250 airplane is equipped with an electronic spoiler-control system and a mechanical aileron-control system that provide roll control of the aircraft through pilot inputs. An electronic control unit operates the roll spoilers to assist the ailerons in roll control of

the aircraft. Current part 25 airworthiness regulations account for control laws for which lateral control-surface deflection is proportional to control-stick deflection. They do not address any nonlinearities or other effects on roll-control-surface actuation that may be caused by electronic flight controls. Since this type of system may affect flight loads, and therefore the structural capability of the airplane, specific regulations are needed to address these effects.

These special conditions differ from current requirements in that they require roll maneuvers to result from defined movements of the cockpit roll control, as opposed to defined aileron deflections. These 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.

These special conditions are limited to the roll axis only. Special conditions are no longer needed for the yaw axis because § 25.351 was revised at Amendment 25-91 to take into account the effects of an electronic flight control system for this control axis.

Applicability

As discussed above, these special conditions are applicable to the GALP Model G250 airplane. Should GALP apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, the special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on the GALP Model G250 airplane. It is not a rule of general applicability and it affects only the applicant who applied to the FAA for approval of these features on the airplane.

The FAA has determined that prior public notice and comment are unnecessary and impracticable, and good cause exists for adopting these special conditions upon issuance.

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:

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

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type-certification basis for GALP Model G250 airplane.

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 the design. In determining the resulting control-surface deflections, the torsional flexibility of the wing must be considered in accordance with § 25.301(b):

In lieu of compliance with § 25.349(a):

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 design cruising speed 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 Special Condition 2, above.
4. At design diving speed 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 Special Condition 2, above.

Issued in Renton, Washington, on July 1, 2011.

/s/ Jeffrey E. Duven

Jeffrey E. Duven
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service