

- The pilot should only be able to cancel it by achieving a higher energy state.
 - An adequate hierarchy should exist among the warnings so that the pilot is not confused and led to take inappropriate recovery action if multiple warnings occur.
- Simulators and flight test should evaluate global energy awareness and ensure that low energy cues are not a nuisance in all take-off and landing altitude ranges for which certification is requested. These evaluations should include all relevant combinations of weight, center of gravity position, configuration, airbrakes position, and available thrust, including reduced and derated take-off thrust operations and engine failure cases. A sufficient number of tests should be conducted to assess the level of energy awareness and the effects of energy management errors. 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.

Discussion of Comments

Notice of proposed special conditions No. 25–12–11–SC for the Embraer S.A. Model EMB–550 airplanes was published in the **Federal Register** on November 20, 2012 (77 FR 69573). No comments were received, and the special conditions are adopted as proposed.

Applicability

As discussed above, these special conditions are applicable to the Model EMB–550 airplane. Should Embraer S.A. 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 one model of airplanes. 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:

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 Model EMB–550 airplanes.

1. *Electronic Flight Control System:* Lateral-Directional and Longitudinal Stability and Low Energy Awareness. In lieu of the requirements of §§ 25.171, 25.173, 25.175, and 25.177, the following special conditions apply:

a. The airplane must be shown to have suitable static lateral, directional, and longitudinal stability in any condition normally encountered in service, including the effects of atmospheric disturbance. The showing of suitable static lateral, directional, and longitudinal stability must be based on the airplane handling qualities, including pilot workload and pilot compensation, for specific test procedures during the flight test evaluations.

b. The airplane must provide adequate awareness to the pilot of a low energy (e.g., low speed, low thrust, or low height) state when fitted with flight control laws presenting neutral longitudinal stability significantly below the normal operating speeds. “Adequate awareness” means warning information must be provided to alert the crew of unsafe operating conditions and to enable them to take appropriate corrective action.

c. The static directional stability (as shown by the tendency to recover from a skid with the rudder free) must be positive for any landing gear and flap position and symmetrical power condition, at speeds from $1.13 V_{SR1}$, up to V_{FE} , V_{LE} , or V_{FC}/M_{FC} (as appropriate).

d. The static lateral stability (as shown by the tendency to raise the low wing in a sideslip with the aileron controls free) for any landing gear and wing-flap position and symmetric power condition, may not be negative at any airspeed (except that speeds higher than V_{FE} need not be considered for wing-flaps extended configurations nor speeds higher than V_{LE} for landing gear extended configurations) in the following airspeed ranges:

- i. From $1.13 V_{SR1}$ to V_{MO}/M_{MO} .
- ii. From V_{MO}/M_{MO} to V_{FC}/M_{FC} , unless the divergence is –
 1. Gradual;
 2. Easily recognizable by the pilot; and
 3. Easily controllable by the pilot.

e. In straight, steady sideslips over the range of sideslip angles appropriate to the operation of the airplane, but not less than those obtained with one-half of the available rudder control movement (but not exceeding a rudder control force of 180 pounds), rudder control movements and forces must be substantially proportional to the angle

of sideslip in a stable sense; and the factor of proportionality must lie between limits found necessary for safe operation. This requirement must be met for the configurations and speeds specified in paragraph (c) of this section.

f. For sideslip angles greater than those prescribed by paragraph (e) of this section, up to the angle at which full rudder control is used or a rudder control force of 180 pounds is obtained, the rudder control forces may not reverse, and increased rudder deflection must be needed for increased angles of sideslip. Compliance with this requirement must be shown using straight, steady sideslips, unless full lateral control input is achieved before reaching either full rudder control input or a rudder control force of 180 pounds; a straight, steady sideslip need not be maintained after achieving full lateral control input. This requirement must be met at all approved landing gear and wing-flap positions for the range of operating speeds and power conditions appropriate to each landing gear and wing-flap position with all engines operating.

Issued in Renton, Washington, on February 12, 2013.

Ali Bahrami,

Manager, Transport Airplane Directorate, Aircraft Certification Service.

[FR Doc. 2013–03677 Filed 2–15–13; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA–2012–1215; Special Conditions No. 25–12–482–SC]

Special Conditions: Embraer S.A., Model EMB–550 Airplanes; Flight Envelope Protection: High Speed Limiting

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions.

SUMMARY: These special conditions are issued for the Embraer S.A. Model EMB–550 airplane. This airplane will have a novel or unusual design feature, specifically an electronic flight control system which contains fly-by-wire control laws, including envelope protections, for the overspeed protection and roll limiting function. 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: *Effective date:* March 21, 2013.

FOR FURTHER INFORMATION CONTACT: Joe Jacobsen, FAA, Airplane and Flight Crew Interface Branch, ANM-111, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98057-3356; telephone 425-227-2011; facsimile 425-227-1149.

SUPPLEMENTARY INFORMATION:

Background

On May 14, 2009, Embraer S.A. applied for a type certificate for their new Model EMB-550 airplane. The Model EMB-550 airplane is the first of a new family of jet airplanes designed for corporate flight, fractional, charter, and private owner operations. The aircraft has a conventional configuration with a low wing and T-tail empennage. The primary structure is metal with composite empennage and control surfaces. The Model EMB-550 airplane is designed for 8 passengers, with a maximum of 12 passengers. It is equipped with two Honeywell HTF7500-E medium bypass ratio turbofan engines mounted on aft fuselage pylons. Each engine produces approximately 6,540 pounds of thrust for normal takeoff. The primary flight controls consist of hydraulically powered fly-by-wire elevators, aileron and rudder, controlled by the pilot or copilot sidestick.

The longitudinal control law design of the Embraer S.A. Model EMB-550 airplane incorporates an overspeed protection system in the normal mode. This mode prevents the pilot from inadvertently or intentionally exceeding a speed approximately equivalent to V_{FC} or attaining V_{DF} . Current Title 14, Code of Federal Regulations (14 CFR) part 25 did not envision a high speed limiter that might preclude or modify flying qualities assessments in the overspeed region.

Type Certification Basis

Under the provisions of 14 CFR 21.17, Embraer S.A. must show that the Model EMB-550 airplane meets the applicable provisions of part 25, as amended by Amendments 25-1 through 25-127 thereto.

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 EMB-550 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 or similar novel or unusual design feature, the special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Model EMB-550 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 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).

Novel or Unusual Design Features

The Model EMB-550 airplane will incorporate the following novel or unusual design feature: an electronic flight control system which contains fly-by-wire control laws, including envelope protections, for the overspeed protection and roll limiting function. Current part 25 requirements do not contain appropriate standards for high speed protection systems.

Discussion

As further discussed previously, a special condition is necessary in addition to the requirements of § 25.143 for the operation of the high speed protection. The general intent is that the overspeed protection does not impede normal maneuvering and speed control and that the overspeed protection does not restrict or prevent emergency maneuvering. Therefore, 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.

Discussion of Comments

Notice of proposed special conditions No. 25-12-12-SC for the Embraer S.A. Model EMB-550 airplanes was published in the **Federal Register** on November 20, 2012 (77 FR 69572). No comments were received, and the special conditions are adopted as proposed.

Applicability

As discussed above, these special conditions are applicable to the Model EMB-550 airplane. Should Embraer S.A. 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 one model of airplanes. 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:

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 Embraer S.A. Model EMB-550 airplanes.

1. In addition to § 25.143, the following requirement applies: Operation of the high speed limiter during all routine and descent procedure flight must not impede normal attainment of speeds up to overspeed warning.

Issued in Renton, Washington, on February 12, 2013.

Ali Bahrami,

Manager, Transport Airplane Directorate, Aircraft Certification Service.

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2012-1005; Directorate Identifier 2012-NE-27-AD; Amendment 39-17349; AD 2013-03-14]

RIN 2120-AA64

Airworthiness Directives; Pratt & Whitney Canada Corp Turbohaft Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for certain