

either by crew action or automatically when the landing gear are down and locked and flaps are extended—the ATTCS indication remains inhibited.

When the go-around thrust mode is enabled, unless the ATTCS system has failed, the white “ATTCS” icon will again be shown on the EICAS, indicating to the pilot that the system is enabled and in an operative condition in the event a go-around is necessary. If the thrust lever is subsequently placed in the TO/GA position, the ATTCS icon turns green, indicating that the system is armed and ready to operate.

If an engine fails during the go-around or during a one-engine-inoperative go-around in which an engine had been shut down or otherwise made inoperative earlier in the flight, the EICAS indication will be GA RSV (go-around reserve) when the thrust levers are placed in the TO/GA position. The GA RSV indication means that the maximum go-around thrust under the ambient conditions has been commanded.

The propulsive thrust used to determine compliance with the approach climb requirements of § 25.121(d) is limited to the lesser of (i) the thrust provided by the ATTCS system, or (ii) 111 percent of the thrust resulting from the initial thrust setting with the ATTCS system failing to perform its uptrim function and without action by the crew to reset thrust. This requirement limits the adverse performance effects of a failure of the ATTCS and ensures adequate all-engines-operating go-around performance.

These special conditions would require a showing of compliance with the provisions of § 25.904 and Appendix I applicable to the approach climb and go-around maneuvers.

The definition of a critical time interval for the approach climb case is of primary importance. During this time it must be extremely improbable to violate a flight path derived from the gradient requirement of § 25.121(d). That gradient requirement implies a minimum one-engine-inoperative flight path with the airplane in the approach configuration. The engine may have been inoperative before initiating the go-around, or it may become inoperative during the go-around. The definition of the critical time interval must consider both possibilities.

Applicability

As discussed above, these special conditions are applicable to the Embraer Model ERJ-170 series airplanes. Should Embraer 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 special conditions would apply to that model as well under the provisions of § 21.101(a)(1), Amendment 21-69, effective September 16, 1991.

Conclusion

This action affects only certain novel or unusual design features on the Embraer Model ERJ-170 series airplanes. 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.

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 Proposed Special Conditions

Accordingly, the Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for Embraer Model ERJ-170 series airplanes.

I. Electronic Flight Control System

In addition to compliance with §§ 25.143, 25.671 and 25.672, when a flight condition exists where, without being commanded by the crew, control surfaces are coming so close to their limits that return to the normal flight envelope and (or) continuation of safe flight requires a specific crew action, a suitable flight control position annunciation shall be provided to the crew, unless other existing indications are found adequate or sufficient to prompt that action. Note: The term suitable also indicates an appropriate balance between nuisance and necessary operation.

II. Automatic Takeoff Thrust Control System (ATTCS)

To use the thrust provided by the ATTCS to determine the approach climb performance limitations, the Embraer Model ERJ-170 series airplane must comply with the requirements of § 25.904 and Appendix I, including the following requirements pertaining to the go-around phase of flight:

1. Definitions.

(a) *TOGA—(Take Off/Go-Around).* Throttle lever in takeoff or go-around position.

(b) *Automatic Takeoff Thrust Control System—(ATTCS).* The Embraer Model ERJ-170 series ATTCS is defined as the entire automatic system available in takeoff when selected by the pilot and

always in go-around mode; including all devices, both mechanical and electrical, that sense engine failure, transmit signals, and actuate fuel controls or power levers or increase engine power by other means on operating engines to achieve scheduled thrust or power increases and to furnish cockpit information on system operation.

(c) *Critical Time Interval.* The definition of the Critical Time Interval in appendix I, § 125.2(b) shall be expanded to include the following:

(1) When conducting an approach for landing using ATTCS, the critical time interval is defined as 120 seconds. A shorter time interval may be used if justified by a rational analysis. An accepted analysis that has been used on past aircraft certification programs is as follows:

(i) The critical time interval *begins* at a point on a 2.5 degree approach glide path from which, assuming a simultaneous engine and ATTCS failure, the resulting approach climb flight path intersects a flight path originating at a later point on the same approach path corresponding to the part 25 one-engine-inoperative approach climb gradient. The period of time from the point of simultaneous engine and ATTCS failure to the intersection of these flight paths must be no shorter than the time interval used in evaluating the critical time interval for takeoff, beginning from the point of simultaneous engine and ATTCS failure and ending upon reaching a height of 400 feet.

(ii) The critical time interval *ends* at the point on a minimum performance, all-engines-operating go-around flight path from which, assuming a simultaneous engine and ATTCS failure, the resulting minimum approach climb flight path intersects a flight path corresponding to the part 25 minimum one-engine-inoperative approach-climb-gradient. The all-engines-operating go-around flight path and the part 25 one-engine-inoperative, approach-climb-gradient flight path originate from a common point on a 2.5 degree approach path. The period of time from the point of simultaneous engine and ATTCS failure to the intersection of these flight paths must be no shorter than the time interval used in evaluating the critical time interval for the takeoff beginning from the point of simultaneous engine and ATTCS failure and ending upon reaching a height of 400 feet.

(2) The critical time interval must be determined at the altitude resulting in the longest critical time interval for which one-engine-inoperative approach