

# Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 25

[Docket No. NM248; Special Conditions No. 25-03-03-SC]

#### Special Conditions: Embraer Model ERJ-170 Series Airplanes; Electronic Flight Control Systems; Automatic Takeoff Thrust Control System

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Supplemental notice of proposed special conditions; reopening of comment period.

**SUMMARY:** This document revises proposed special conditions which were previously published in the **Federal Register** for the Embraer Model ERJ-170 series airplanes. These airplanes 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 are associated with (1) Electronic Flight Control Systems and (2) Automatic Takeoff Thrust Control System (ATTCS). The applicable airworthiness regulations do not contain adequate or appropriate safety standards for these design features. 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. This revision adds a limitation on the amount of performance credit to be given for the propulsive thrust provided by the ATTCS that was omitted from the original notice. Additional special conditions will be issued for other novel or unusual design features of Embraer Model 170 series airplanes.

**DATES:** Comments must be received on or before July 7, 2003.

**ADDRESSES:** Comments on this proposal may be mailed in duplicate to: Federal

Aviation Administration, Transport Airplane Directorate, Attention: Rules Docket (ANM-113), Docket No. NM248, 1601 Lind Avenue SW., Renton, Washington 98055-4056; or delivered in duplicate to the Transport Airplane Directorate at the above address. All comments must be marked: Docket No. NM248. Comments may be inspected in the Rules Docket weekdays, except Federal holidays, between 7:30 a.m. and 4 p.m.

**FOR FURTHER INFORMATION CONTACT:** Tom Groves, FAA, International Branch, ANM-116, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98055-4056; telephone (425) 227-1503; facsimile (425) 227-1149; e-mail [tom.groves@faa.gov](mailto:tom.groves@faa.gov).

#### SUPPLEMENTARY INFORMATION:

##### Comments Invited

The FAA invites interested persons to participate in this rulemaking by submitting 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 proposed special conditions. The docket is available for public inspection 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 notice 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 the proposed special conditions in light of the comments we receive.

If you want the FAA to acknowledge receipt of your comments on this proposal, include with your comments 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 May 20, 1999, Embraer applied for a type certificate for its new Model ERJ-170 airplane. Two basic versions of the Model ERJ-170 are included in the application. The ERJ-170-100 airplane is a 69-78 passenger, twin-engine regional jet with a maximum takeoff weight of 81,240 pounds. The ERJ-170-200 is a derivative with a lengthened fuselage. Passenger capacity for the ERJ-170-200 is increased to 86, and maximum takeoff weight is increased to 85,960 pounds.

Special conditions—pertaining to Electronic Flight Control Systems and to the ATTCS—were proposed as part of the type certification basis applicable to Embraer Model ERJ-170 series airplanes. These proposed special conditions were initially published in the **Federal Register** on April 23, 2003 (68 FR 19958). Shortly thereafter, the Federal Aviation Administration (FAA) received new information which indicated the need for a limitation on the amount of performance credit to be given for the propulsive thrust provided by the ATTCS that was omitted from the original notice. The purpose of the limitation is to reduce adverse performance effects of a failure of the ATTCS and to ensure adequate all-engines-operating go-around performance.

Upon consideration, the FAA determined that a limitation reflecting the new information must be incorporated into the special conditions for the Embraer Model ERJ-170 series airplanes. Accordingly, the FAA is issuing this supplemental notice of proposed special conditions. A description of the proposed limitation is provided in the preamble of this document (*see* Novel or Unusual Design Features, paragraph II), and the proposed limitation itself is included as paragraph 2.(e) of The Proposed Special Conditions.

#### Type Certification Basis

Under the provisions of 14 CFR 21.17, Embraer must show that the Model ERJ-170 series airplanes meet the applicable provisions of 14 CFR part 25, as amended by Amendments 25-1 through 25-98.

If the Administrator finds that the applicable airworthiness regulations (*i.e.*, part 25, as amended) do not contain adequate or appropriate safety

standards for Embraer Model ERJ-170 series airplanes because of novel or unusual design features, special conditions are prescribed under the provisions of § 21.16.

In addition to the applicable airworthiness regulations and special conditions, Embraer Model ERJ-170 series airplanes must comply with the fuel vent and exhaust emission requirements of 14 CFR part 34 and the noise certification requirements of 14 CFR 36, and the FAA must issue a finding of regulatory adequacy pursuant to § 611 of Public Law 93-574, the "Noise Control Act of 1972."

Special conditions, as defined in 14 CFR 11.19, are issued in accordance with § 11.38 and become part of the type certification basis in accordance with § 21.17(a)(2), Amendment 21-69, effective September 16, 1991.

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, or should any other model already included on the same type certificate be modified to incorporate the same novel or unusual design features, the special conditions would also apply to the other model under the provisions of § 21.101(a)(1), Amendment 21-69, effective September 16, 1991.

### Novel or Unusual Design Features

The Embraer Model ERJ-170 series airplanes will incorporate the following novel or unusual design features:

#### I. Electronic Flight Control System

In airplanes with electronic flight control systems, there may not always be a direct correlation between pilot control position and the associated airplane control surface position. Under certain circumstances, a commanded maneuver that does not require a large control input may require a large control surface movement, possibly encroaching on a control surface or actuation system limit without the flightcrew's knowledge. This situation can arise in either manually piloted or autopilot flight and may be further exacerbated on airplanes where the pilot controls are not back-driven during autopilot system operation. Unless the flightcrew is made aware of excessive deflection or impending control surface limiting, control of the airplane by the pilot or autoflight system may be inadvertently continued so as to cause loss of control of the airplane or other unsafe characteristics of stability or performance.

Given these possibilities, a special condition is proposed for Embraer Model ERJ-170 series airplanes to address control surface position awareness. This special condition would require that suitable display or annunciation of flight control position be provided to the flightcrew when near full surface authority (not crew-commanded) is being used, unless other existing indications are found adequate or sufficient to prompt any required crew actions. Suitability of such a display or annunciation must take into account that some piloted maneuvers may demand the airplane's maximum performance capability, possibly associated with a full control surface deflection. Therefore, simple display systems—that would function in both intended and unexpected control-limiting situations—must be properly balanced to provide needed crew awareness and minimize nuisance alerts. A monitoring system that compares airplane motion, surface deflection, and pilot demand could be useful in eliminating nuisance alerting.

#### II. Automatic Takeoff Thrust Control System (ATTCS)

The Embraer Model ERJ-170 series airplane will incorporate an Automatic Takeoff Thrust Control System (ATTCS) in the engine's Full Authority Digital Electronic Control (FADEC) system architecture. It has been proposed that the FAA allow performance credit to be taken for use of this function during go-around to show compliance with the requirement of § 25.121(d) regarding the approach climb gradient.

Section 25.904 and Appendix I refer to operation of ATTCS only during takeoff. Model ERJ-170 series airplanes have this feature for go-around also. The ATTCS will automatically increase thrust to the maximum go-around thrust available under the ambient conditions in the following circumstances:

- If an engine failure occurs during an all-engines-operating go-around, or
- If an engine has failed or been shut down earlier in the flight.

This maximum go-around thrust is the same as that used to show compliance with the approach-climb-gradient requirement of § 25.121(d). If the ATTCS is not operating, selection of go-around thrust will result in a lower thrust level.

The part 25 standards for ATTCS, contained in § 25.904 [Automatic takeoff thrust control system (ATTCS) and Appendix I], specifically restrict performance credit for ATTCS to takeoff. Expanding the scope of the standards to include other phases of flight, such as go-around, was

considered when the standards were issued but was not accepted because of the effect on the flightcrew's workload. As stated in the preamble to amendment 25-62:

In regard to ATTCS credit for approach climb and go-around maneuvers, current regulations preclude a higher thrust for the approach climb [§ 25.121(d)] than for the landing climb [§ 25.119]. The workload required for the flightcrew to monitor and select from multiple in-flight thrust settings in the event of an engine failure during a critical point in the approach, landing, or go-around operations is excessive. Therefore, the FAA does not agree that the scope of the amendment should be changed to include the use of ATTCS for anything except the takeoff phase." (Refer to 52 FR 43153, November 9, 1987.)

The ATTCS incorporated on Embraer Model ERJ-170 series airplanes allows the pilot to use the same power setting procedure during a go-around, regardless of whether or not an engine fails. In either case, the pilot obtains go-around power by moving the throttles into the forward (takeoff/go-around) throttle detent. Since the ATTCS is permanently armed for the go-around phase, it will function automatically following an engine failure and advance the remaining engine to the ATTCS thrust level. This design adequately addresses the concerns about pilot workload which were discussed in the preamble to Amendment 25-62.

The system design allows the pilot to enable or disable the ATTCS function for takeoff. If the pilot enables ATTCS, a white "ATTCS" icon will be displayed on the Engine Indication and Crew Alerting System (EICAS) beneath the thrust mode indication on the display. This white icon indicates to the pilot that the ATTCS function is enabled. When the throttle lever is put in the TO/GA (takeoff/go-around) detent position, the white icon turns green, indicating to the pilot that the ATTCS is armed. If the pilot disables the ATTCS function for takeoff, no indication appears on the EICAS.

Regardless of whether the ATTCS is enabled for takeoff, it is automatically enabled when the airplane reaches the end of the take-off phase (that is, the thrust lever is below the TO/GA position and the altitude is greater than 1,700 feet above the ground, 5 minutes have elapsed since lift-off, or the airplane speed is greater than 140 knots).

During climb, cruise and descent, when the throttle is not in the TO/GA position, the ATTCS indication is inhibited. During descent and approach to land, until the thrust management system go-around mode is enabled—

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 announcement 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:

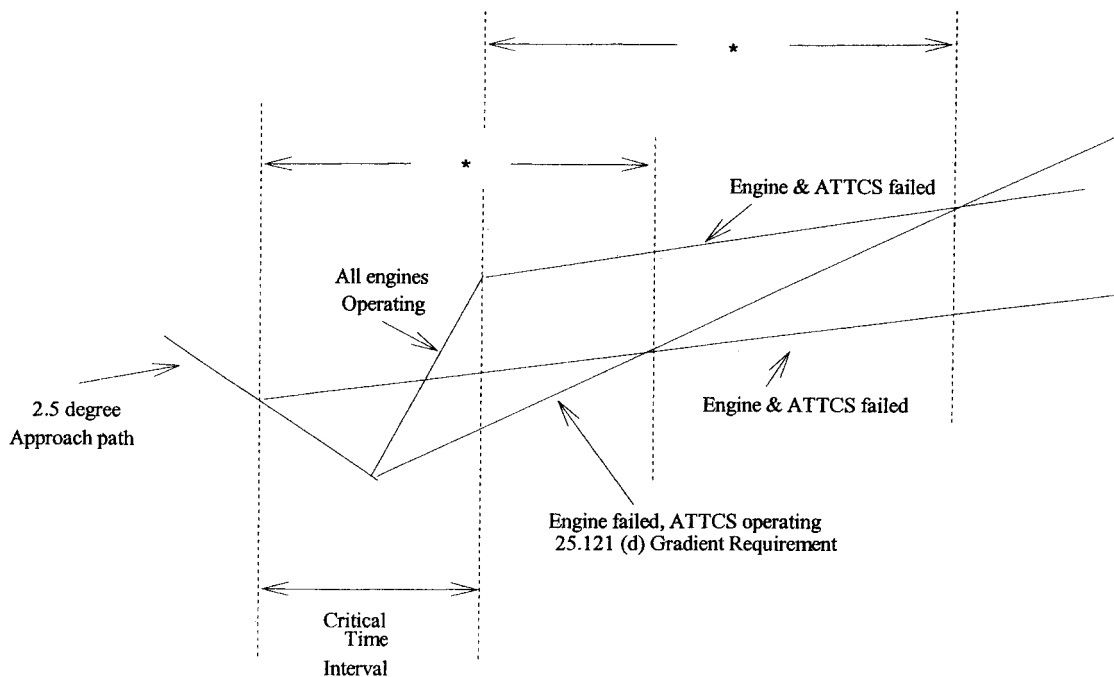
(i) The critical time interval *begins* at a point on a 2.5 degree approach glide path from which, assuming a simultaneous engine and ATTCS failure, the resulting approach climb flight path intersects a flight path originating at a later point on the same approach path corresponding to the part 25 one-engine-inoperative 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

climb performance data are presented in the Airplane Flight Manual (AFM).

(3) The critical time interval is illustrated in the following figure:



The engine and ATTCS failed time interval must be no shorter than the time interval from the point of simultaneous engine and ATTCS failure to a height of 400 feet used to comply with I25.2(b) for ATTCS use during takeoff.

## 2. Performance and System Reliability Requirements.

The applicant must comply with the following performance and ATTCS reliability requirements:

(a) An ATTCS failure or combination of failures in the ATTCS during the critical time interval:

(1) Shall not prevent the insertion of the maximum approved go-around thrust or power or must be shown to be an improbable event.

(2) Shall not result in a significant loss or reduction in thrust or power or must be shown to be an extremely improbable event.

(b) The concurrent existence of an ATTCS failure and an engine failure during the critical time interval must be shown to be extremely improbable.

(c) All applicable performance requirements of part 25 must be met with an engine failure occurring at the most critical point during go-around with the ATTCS system functioning.

(d) The probability analysis must include consideration of ATTCS failure occurring after the time at which the flightcrew last verifies that the ATTCS is in a condition to operate until the beginning of the critical time interval.

(e) The propulsive thrust obtained from the operating engine after failure of the critical engine during a go-around used to show compliance with the one-engine-inoperative climb requirements of § 25.121(d) may not be greater than the lesser of:

(i) The actual propulsive thrust resulting from the initial setting of power or thrust controls with the ATTCS functioning; or

(ii) 111 percent of the propulsive thrust resulting from the initial setting of power or thrust controls with the ATTCS failing to reset thrust or power and without any action by the crew to reset thrust or power.

## 3. Thrust Setting.

(a) The initial go-around thrust setting on each engine at the beginning of the go-around phase may not be less than any of the following:

(1) That required to permit normal operation of all safety-related systems and equipment dependent upon engine thrust or power lever position; or

(2) That shown to be free of hazardous engine response characteristics when thrust or power is advanced from the initial go-around position to the maximum approved power setting.

(b) For approval of an ATTCS for go-around, the thrust setting procedure must be the same for go-arounds initiated with all engines operating as for go-arounds initiated with one engine inoperative.

## 4. Powerplant Controls.

(a) In addition to the requirements of § 25.1141, no single failure or malfunction, or probable combination thereof, of the ATTCS, including associated systems, may cause the failure of any powerplant function necessary for safety.

(b) The ATTCS must be designed to accomplish the following:

(1) Following any single engine failure during go around: Apply thrust or power on the operating engine(s) to achieve the maximum approved go-around thrust without exceeding engine operating limits;

(2) Permit manual decrease or increase in thrust or power up to the maximum go-around thrust approved for the airplane under existing conditions through the use of the power lever. For airplanes equipped with limiters that automatically prevent engine operating limits from being exceeded under existing ambient conditions, other means may be used to increase the thrust in the event of an ATTCS failure. Any such means must be located on or forward of the power levers; be easily identified and operated under all operating conditions by a single action of either pilot with the hand that is normally used to actuate the power levers, and meet the requirements of § 25.777(a), (b), and (c);

(3) Provide a means to verify to the flightcrew before beginning an approach for landing that the ATTCS is in a condition to operate (unless it can be

demonstrated that an ATTCS failure combined with an engine failure during an entire flight is extremely improbable); and

(4) Provide a means for the flightcrew to deactivate the automatic function. This means must be designed to prevent inadvertent deactivation.

5. In addition to the requirements of § . 25.1305, the following requirements pertaining to powerplant instruments must be met:

(a) A means must be provided to indicate when the ATTCS is in the armed or ready condition; and

(b) If the inherent flight characteristics of the airplane do not provide adequate warning that an engine has failed, a warning system that is independent of the ATTCS must be provided to give the pilot a clear warning of any engine failure during go-around.

Issued in Renton, Washington, on May 28, 2003.

**Ali Bahrami,**

*Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.*  
[FR Doc. 03-14161 Filed 6-4-03; 8:45 am]

**BILLING CODE 4910-13-P**

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. 2003-SW-08-AD]

RIN 2120-AA64

#### **Airworthiness Directives; Eurocopter Deutschland GmbH Model EC135 P1, P2, T1, and T2 Helicopters**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** This document proposes superseding an existing airworthiness directive (AD) for Eurocopter Deutschland GmbH (ECD) Model EC135 P1 and EC135 T1 model helicopters. That AD currently requires adding the AD or a statement to the Rotorcraft Flight Manual (RFM) informing the pilot to reduce power and land as soon as practicable if a thump-like sound followed by unusual vibration occurs during flight. That AD also requires visually inspecting the main rotor drive torque strut assembly (strut) for a crack or a break, recording the inspections in the historical or equivalent record, and re-marking and relocating the strut, as appropriate, and replacing any unairworthy strut with an airworthy strut. Also, that AD establishes life

limits for certain struts and revises the life limit for other struts. This action would retain the same requirements but would add the ECD Model EC135 P2 and EC135 T2 helicopters to the applicability and would require replacing certain life-limited struts with titanium struts. This proposal is prompted by the manufacture of a titanium strut that provides a permanent correction to the unsafe condition that led to limiting the life of other struts that have failed. The actions specified by the proposed AD are intended to prevent failure of a strut and subsequent loss of control of the helicopter.

**DATES:** Comments must be received on or before August 4, 2003.

**ADDRESSES:** Submit comments in triplicate to the Federal Aviation Administration (FAA), Office of the Regional Counsel, Southwest Region, Attention: Rules Docket No. 2003-SW-08-AD, 2601 Meacham Blvd., Room 663, Fort Worth, Texas 76137. You may also send comments electronically to the Rules Docket at the following address: [9-asw-adcomments@faa.gov](mailto:9-asw-adcomments@faa.gov). Comments may be inspected at the Office of the Regional Counsel between 9 a.m. and 3 p.m., Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Richard Monschke, Aviation Safety Engineer, FAA, Rotorcraft Directorate, Rotorcraft Standards Staff, Fort Worth, Texas 76193-0110, telephone (817) 222-5116, fax (817) 222-5961.

#### **SUPPLEMENTARY INFORMATION:**

##### **Comments Invited**

Interested persons are invited to participate in the making of the proposed rule by submitting such written data, views, or arguments as they may desire. Communications should identify the Rules Docket number and be submitted in triplicate to the address specified above. All communications received on or before the closing date for comments will be considered before taking action on the proposed rule. The proposals contained in this document may be changed in light of the comments received.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the proposed rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report summarizing each FAA-public contact concerned with the substance of this proposal will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their mailed comments submitted in response to this proposal must submit a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket No. 2003-SW-08-AD." The postcard will be date stamped and returned to the commenter.

#### **Discussion**

On September 4, 2001, the FAA issued AD 2001-18-13, Amendment 39-12439 (66 FR 47878, September 14, 2001), to require adding the AD or a statement in the Emergency Procedures section of the RFM informing the pilot to reduce power and land as soon as practicable if a thump-like sound followed by unusual vibration occurs during flight. That AD also requires inspecting struts, part number (P/N) L633M1001 103 and L633M1001 105; replacing any cracked or broken strut with an airworthy strut before further flight; and recording each inspection in the helicopter's historical or equivalent record. That AD revised the Airworthiness Limitations section of the maintenance manual by establishing life limits for certain struts. That action was prompted by a report of a thump-like sound heard during flight followed by unusual vibrations due to failure of the right-hand (RH) strut between the main transmission and the fuselage. The requirements of that AD are intended to prevent failure of a strut and subsequent loss of control of the helicopter.

Since issuing that AD, the Luftfahrt-Bundesamt (LBA), the airworthiness authority for the Federal Republic of Germany, advises that struts, (P/N) L633M1001 103 and L633M1001 105, should not be used beyond December 31, 2004. The LBA advises replacing those struts with torque struts, P/N L633M1001 104, after January 1, 2005.

ECD has issued Alert Service Bulletin EC135-63A-002, Revision 2, dated June 26, 2002 (ASB), which specifies inspecting for a crack, marking strut locations and serial numbers, and transferring the location side of the torque struts or replacing each strut, P/N L633M1001 103 or L633M10001 105, with a torque strut, P/N L633M1001 104, that is anodized and not coated with paint, which have no life limit. The LBA classified this ASB as mandatory and issued AD No. 2001-107/2, dated September 19, 2002, to ensure the continued airworthiness of these helicopters in the Federal Republic of Germany.

This helicopter model is manufactured in the Federal Republic of Germany and is type certificated for