

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. FAA–2026–10627; Notice No. 25–898–SC]

Special Conditions: Embraer S.A. Model ERJ 190–400 Airplane; Embraer Enhanced Takeoff System

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This action proposes special conditions for the Embraer S.A. (Embraer) Model ERJ 190–400 series airplane. This airplane will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. This design feature is a functionality known as the Embraer Enhanced Takeoff System (E²TS). The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. 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: Send comments on or before November 27, 2026.

ADDRESSES: Send comments identified by Docket No. FAA–2026–10627 using any of the following methods:

Federal eRegulations Portal: Go to www.regulations.gov and follow the online instructions for sending your comments electronically.

Mail: Send comments to Docket Operations, M–30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue SE, Room W12–140, West Building Ground Floor, Washington, DC 20590–0001.

Hand Delivery or Courier: Take comments to Docket Operations in

Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Fax: Fax comments to Docket Operations at 202–493–2251.

Docket: Background documents or comments received may be read at www.regulations.gov at any time. Follow the online instructions for accessing the docket or go to Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. **FOR FURTHER INFORMATION CONTACT:** Troy Brown, Flight Performance and Human Factors Section, AIR–687, Certification Standards Division, Aircraft Certification Service, Federal Aviation Administration, 1801 S Airport Rd., Wichita, KS 67209–2190; telephone and fax 405–666–1050; email troy.a.brown@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites 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 proposed special conditions, explain the reason for any recommended change, and include supporting data.

The FAA will consider all comments received by the closing date for comments, and will consider comments filed late if it is possible to do so without incurring delay. The FAA may change these special conditions based on the comments received.

Privacy

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in title 14, Code of Federal Regulations (14 CFR) 11.35, the FAA will post all comments received without change to www.regulations.gov, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about these special conditions.

Confidential Business Information

Confidential Business Information (CBI) is commercial or financial

information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to these special conditions contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to these special conditions, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and the indicated comments will not be placed in the public docket of these proposed special conditions. Send submissions containing CBI to the individual listed in the For Further Information Contact section above. Comments the FAA receives, which are not specifically designated as CBI, will be placed in the public docket for these proposed special conditions.

Background

On December 5, 2021, Embraer applied for a change to Type Certificate No. A57NM to add a functionality known as E²TS in the Model ERJ 190–400 series airplane. The Embraer Model ERJ 190–400 series airplane is a twin-engine, transport category airplane with a maximum passenger capacity of 146, and a maximum takeoff weight of 135,584 pounds.

Type Certification Basis

Under the provisions of 14 CFR 21.101, Embraer must show that the changes to the Embraer Model ERJ 190–400 series airplane continue to meet the applicable provisions of the regulations listed in Type Certificate No. A57NM or the applicable regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA.

If the Administrator finds that the applicable airworthiness regulations (e.g., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Embraer Model ERJ 190–400 series 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, or should any other model already included on the same type certificate be modified to incorporate the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Embraer Model ERJ 190–400 series airplane must comply with the exhaust emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with 14 CFR 11.38, and they become part of the type certification basis under § 21.101.

Novel or Unusual Design Features

The Embraer Model ERJ 190–400 series airplane will incorporate the following novel or unusual design feature:

The Embraer ERJ 190–400 airplane will have a functionality known as Embraer Enhanced Takeoff System (E²TS), a function which automatically controls the airplane's pitch and bank angle without pilot input to the airplane controls.

Discussion

E²TS is an autoflight function specifically designed to improve takeoff performance and enhance operational safety. It is engaged at the beginning of the takeoff roll, when the thrust levers are advanced to the takeoff go-around (TOGA) detent. Upon engagement, the airplane control in pitch—including the takeoff rotation maneuver and initial climb-out—will be automatically performed, without any pilot intervention. Control of the bank angle will also be automatically performed by E²TS, maintaining wings level while the airplane is on the ground and the directional tracking when the airplane is in the air. During the ground run, the flight crew is responsible for maintaining runway centerline via manual directional control, with augmentation provided by the E²TS to minimize heading deviations.

Once the airplane is airborne, E²TS provides control using sideslip as the reference. If all engines are operating (AEO), zero sideslip is the reference; if one engine is inoperative (OEI), then the Best Beta is considered as the sideslip reference. It is noted that any flight crew intervention on the rudder pedal is summed with the rudder controls that are output by the E²TS mode.

Takeoff performance requirements of 14 CFR part 25 require the ability to safely complete the takeoff or bring the airplane to a complete stop in a rejected takeoff. As written, the takeoff performance requirements presuppose manual flying with a human pilot onboard making certain decisions and taking action. In fact, paragraph 4.4.5.1 of AC 25–7D reads: “The rotation speed, V_R , is intended to be the speed at which the pilot initiates action to raise the nose wheel(s) off the ground during the acceleration to V_2 .” The current regulations do not take into consideration that the takeoff rotation is being performed by an automatic system, not a human being.

These special conditions specifically address paragraphs 25.107(e)(3) and (e)(4), which deal with human pilot variability effects in flying the airplane (formerly called “takeoff abuse tests”). That is, instead of considering the “reasonably expected variations in service” of the original rules, one should now consider “maximum expected deviations” due to sensor accuracy and system tolerances.

Furthermore, for E²TS operation, V_R is the speed at which this system will perform the rotation, and the speed the pilot will use to monitor the automatic rotation. Determination of “maximum expected deviations of V_R ” should reflect “in-service” variations and may be done using a combination of analyses, simulations, and certification flight tests, including, but not limited to, performance and handling qualities tests. Such analyses will result in a deviation that should ensure a level of safety equivalent to or higher than operational flights with conventional takeoffs (manual takeoff with pilot in the loop).

Lastly, to ensure consistency between flight test demonstrations and actual, in-service operations, compliance with 14 CFR 25.101 must be shown, especially paragraphs 25.101(d), (e), (f), and (h).

When demonstrating compliance with these special conditions, the following guidance applies:

- The FAA understands that the automatic rotation provided by E²TS function is expected to reduce rotation variabilities as human piloting variabilities will not be present. Paragraph 25.107(e)(1)(iv) requires an airplane “maximum practicable rate” rotation maneuver. However, sensor inaccuracies and system tolerances will still be present and should be considered as residual variabilities. These residual variabilities should be evaluated in the operational envelope (considering weight, CG, thrust, altitude, temperature, and wind) in a

manner that the V_{LOF}/V_{MU} required margins from 25.107(e)(1)(iv) can be met considering the maximum expected deviations on V_{LOF} .

- Any demonstrations required to show compliance to these special conditions should consider the operational envelope (*i.e.*, weight, CG, thrust, altitude, temperature, and winds) in a manner that the required margins on Airplane Flight Manual (AFM) takeoff distance can be met considering the maximum expected deviations. Performance testing should be executed in limited wind conditions and calculations should assume no wind gusts. Wind gusts need not be considered in demonstrations for compliance with these special conditions.

The 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.

Applicability

As discussed above, these proposed special conditions are 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 feature, these special conditions would apply to the other model as well.

Conclusion

This action affects only a certain novel or unusual design feature 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.

Authority Citation

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(f), 40113, 44701, 44702, and 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 190–400 series airplanes.

(a) In lieu of compliance with 25.107(e)(3), for automatic takeoff systems, the one-engine inoperative takeoff distance, accounting for the maximum expected deviation of V_R allowed by E²TS, must not exceed the

corresponding AFM takeoff distance established in accordance with § 25.113(a)(1).

(b) In lieu of compliance with 25.107(e)(4), for automatic takeoff systems, accounting for the maximum expected deviation of V_R allowed by E²TS, or in out-of-trim conditions, the all-engines-operating takeoff distance must not exceed the corresponding AFM takeoff distance, established in accordance with § 25.113(a), by more than 1%. Deviations of other parameters that might influence pitch rotation dynamics (e.g., pitch angle, pitch rate) must be accounted for, unless the effect of such deviations on the takeoff distance is shown to be negligible.

(c) Operation of the E²TS function must not result in unsafe flight characteristics.

Issued in Des Moines, Washington, on October 7, 2026.

Paul R. Siegmund,

Manager, Transport Airplane and Turbine Engine Standards Branch, Certification Standards Division, Aircraft Certification Service.

[FR Doc. 2026-21907 Filed 10-26-26; 8:45 am]

BILLING CODE 4910-13-P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2026-11817; Project Identifier AD-2026-01020-E]

RIN 2120-AA64

Airworthiness Directives; CFM International, S.A. Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for all CFM International, S.A. (CFM) Model CFM56-7B engines. This proposed AD was prompted by an event involving a CFM Model CFM56-7B26/3 engine where a fan blade separated and resulted in an engine in-flight shutdown (IFSD) with debris penetrating the fuselage, which caused a loss of pressurization and prompted an emergency descent. This proposed AD would require a visual inspection of the fan blades for findings considered not serviceable and, depending on the results of the inspection, replacement with a serviceable part and additional fan blade inspections. This proposed AD would also require sending the

inspection results to CFM if any finding considered not serviceable is found. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by November 27, 2026.

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- *Federal eRulemaking Portal:* Go to *regulations.gov*. Follow the instructions for submitting comments.
- *Fax:* (202) 493-2251.
- *Mail:* U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- *Hand Delivery:* Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

AD Docket: You may examine the AD docket at *regulations.gov* under Docket No. FAA-2026-11817; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

Material Incorporated by Reference:

- For CFM material identified in this proposed AD, contact CFM, GE Aviation Fleet Support, 1 Neumann Way, M/D Room 285, Cincinnati, OH 45215; phone: (877) 432-3272; email: *aviation.fleetsupport@ge.com*.
- You may view this material at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110.

FOR FURTHER INFORMATION CONTACT:

Alexei Marqueen, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198; phone: (781) 238-7178; email: *alexei.t.marqueen@faa.gov*.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments using a method listed under the **ADDRESSES** section. Include “Docket No. FAA-2026-11817; Project Identifier AD-2026-01020-E” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change,

and include supporting data. The FAA will consider all comments received by the closing date and may revise this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to *regulations.gov*, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Alexei Marqueen, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The FAA received a report that a Boeing 737-800 Model airplane powered by CFM56-7B26/3 engines experienced a fan blade separation during flight that resulted in an engine IFSD with debris penetrating the fuselage, which caused a loss of pressurization and prompted an emergency descent. The manufacturer investigation into the root cause of the fan blade failure is ongoing, but preliminary investigation indicates deformation to the fan blades induced a localized vibratory response in the failed blade. This condition, if not addressed, could result in debris penetrating the fuselage and cause a loss of pressurization and prompt an emergency descent.

On April 17, 2018, a Southwest Airlines flight experienced a CFM56-7B engine failure due to a fractured fan blade that led to the engine inlet cowl