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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 23

[Docket No. CE205; Special Conditions No. 23-145-SC]

#### Special Conditions: Cessna Aircraft Company, Model 525B-CJ3 Airplane; Flight Performance, Flight Characteristics, and Operating Limitations

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

**ACTION:** Final special conditions; request for comments.

**SUMMARY:** These special conditions are issued for the Cessna Aircraft Company, Model 525B-CJ3 airplane. This airplane will have a novel or unusual design feature(s) associated with turbofan engines, engine location, and certain performance characteristics necessary for this type of airplane. 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 the airworthiness standards applicable to these airplanes.

**DATES:** The effective date of these special conditions is April 16, 2004. Comments must be received on or before May 27, 2004.

**ADDRESSES:** Comments on these special conditions may be mailed in duplicate to: Federal Aviation Administration, Regional Counsel, ACE-7, Attention: Rules Docket CE205, 901 Locust, Room 506, Kansas City, Missouri 64106; or delivered in duplicate to the Regional Counsel at the above address. Comments must be marked: CE205. 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:

Lowell Foster, Federal Aviation Administration, Aircraft Certification Service, Small Airplane Directorate, ACE-111, 901 Locust, Room 301, Kansas City, Missouri, 816-329-4125, fax 816-329-4090.

**SUPPLEMENTARY INFORMATION:** The FAA has determined that notice and opportunity for prior public comment hereon are impracticable because these procedures would significantly delay issuance of the approval design 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

Interested persons are invited to submit such written data, views, or arguments as they may desire. Communications should identify the regulatory docket or special condition number and be submitted in duplicate to the address specified above. All communications received on or before the closing date for comments will be considered by the Administrator. The special conditions may be changed in light of the comments received. All comments received will be available in the Rules Docket for examination by interested persons, both before and after the closing date for comments. A report summarizing each substantive public contact with FAA personnel concerning this rulemaking will be filed in the docket. Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must include a self-addressed, stamped postcard on which the following statement is made: "Comments to CE205." The postcard will be date stamped and returned to the commenter.

#### Background

On August 4, 2003, Cessna Aircraft Company applied for a type certificate for their new Model 525B. The Model No. 525B is a derivative of the Model 525A and is a commuter category airplane with unique turbofan engines, engine location, and certain

performance characteristics necessary for this type of airplane.

#### Type Certification Basis

Under the provisions of 14 CFR, part 21, § 21.17, Cessna Aircraft Company must show that the Model 525B meets the applicable provisions of part 23, as amended by Amendment 23-1 through 23-54 thereto. If the Administrator finds that the applicable airworthiness regulations (*i.e.*, 14 CFR, part 23) do not contain adequate or appropriate safety standards for the Cessna Model 525B because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions, as appropriate, as defined in § 11.19, are issued in accordance with § 11.38, and become part of the type certification basis in accordance with § 21.17(a)(2).

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 under the provisions of § 21.101(a)(1).

#### Novel or Unusual Design Features

The Cessna Model 525B will incorporate the following novel or unusual design features: Two aft mounted Williams International FJ44-3A turbofan engines rated at 2,780 pounds of thrust with a Full Authority Digital Engine Control (FADEC) system and other performance characteristics that were not envisioned by the regulations when the Model 525 was originally certificated.

#### Applicability

As discussed above, these special conditions are applicable to the Cessna Model 525B. Should Cessna Aircraft Company 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 under the provisions of § 21.101(a)(1).

#### Conclusion

This action affects only certain novel or unusual design features on one model of airplane. It is not a rule of general applicability and affects only the

applicant who applied to the FAA for approval of these features on the airplane.

The substance of these special conditions have been subjected to the notice and comment period in several prior instances and have been derived without substantive change from those previously issued. It is unlikely that prior public comment would result in a significant change from the substance contained herein. For this reason, and because a delay would significantly affect the certification of the airplane, which is imminent, 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. The FAA is requesting comments to allow interested persons to submit views that may not have been submitted in response to the prior opportunities for comment described above.

#### List of Subjects in 14 CFR Part 23

Aircraft, Aviation safety, Signs and symbols.

#### Citation

■ The authority citation for these special conditions is as follows:

**Authority:** 49 U.S.C. 106(g), 40113 and 44701; 14 CFR 21.16 and 21.17; and 14 CFR 11.38 and 11.19.

#### 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 the Cessna Model 525B airplanes.

##### 1. SC 23.51, Takeoff Speeds

Instead of compliance with § 23.51, the following apply:

(a)  $V_1$  must be established in relation to  $V_{EF}$  as follows:

(1)  $V_{EF}$  is the calibrated airspeed at which the critical engine is assumed to fail.  $V_{EF}$  must be selected by the applicant, but may not be less than  $V_{MCG}$  determined under § 23.149(f).

(2)  $V_1$ , in terms of calibrated airspeed, is the takeoff decision speed selected by the applicant; however,  $V_1$  may not be less than  $V_{EF}$  plus the speed gained with the critical engine inoperative during the time interval between the instant at which the critical engine fails and the instant at which the pilot recognizes and reacts to the engine failure, as indicated by the pilot's application of the first retarding means during the accelerate-stop test.

(b)  $V_2$  min, in terms of calibrated airspeed, may not be less than—

(1)  $1.2 V_{S1}$ ;

(2) 1.10 times  $V_{MC}$  established under § 23.149.

(c)  $V_2$ , in terms of calibrated airspeed, must be selected by the applicant to provide at least the gradient of climb required by special condition SC 23.67, but it may not be less than—

(1)  $V_2$  min; and

(2)  $V_R$  plus the speed increment attained (in accordance with § 23.57) before reaching a height of 35 feet above the takeoff surface.

(d)  $V_{MU}$  is the calibrated airspeed at, and above, which the airplane can safely lift off the ground and continue the takeoff.  $V_{MU}$  speeds must be selected by the applicant throughout the range of thrust-to-weight ratios to be certified. These speeds may be established from free-air data if these data are verified by ground takeoff tests.

(e)  $V_R$ , in terms of calibrated airspeed, must be selected in accordance with the conditions of subparagraphs (1) through (4) of this section.

(1)  $V_R$  may not be less than—

(i)  $V_1$ ;

(ii) 105 percent of  $V_{MC}$ ;

(iii) The speed (determined in accordance with § 23.57(c)(2)) that allows reaching  $V_2$  before reaching a height of 35 feet above the takeoff surface; or

(iv) A speed that, if the airplane is rotated at its maximum practicable rate, will result in a  $V_{LOF}$  of not less than 110 percent of  $V_{MU}$  in the all-engines-operating condition and not less than 105 percent of  $V_{MU}$  determined at the thrust-to-weight ratio corresponding to the one-engine-inoperative condition.

(2) For any given set of conditions (such as weight, configuration, and temperature), a single value of  $V_R$ , obtained in accordance with this section, must be used to show compliance with both the one-engine-inoperative and the all-engines-operating takeoff provisions.

(3) It must be shown that the one engine-inoperative takeoff distance, using a rotation speed of 5 knots less than  $V_R$ , established in accordance with subparagraphs (1) and (2) of this section, does not exceed the corresponding one engine-inoperative takeoff distance using the established  $V_R$ . The takeoff distances must be determined in accordance with § 23.59(a)(2).

(4) Reasonably expected variations in service from the established takeoff procedures for the operation of the airplane (such as over-rotation of the airplane and out-of-trim conditions) may not result in unsafe flight characteristics or in marked increases in the scheduled takeoff distances established in accordance with § 23.59.

(f)  $V_{LOF}$  is the calibrated airspeed at which the airplane first becomes airborne.

##### 2. SC 23.63, Climb: General

Instead of compliance with § 23.63(a) and § 23.63(d)(1), the following apply:

(a) Compliance with the requirements of § 23.65, § 23.66, § 23.67, special condition SC 23.67, § 23.69, and § 23.77 must be shown—

(1) Out of ground effect; and

(2) At speeds that are not less than those at which compliance with the powerplant cooling requirements of § 23.1041 to § 23.1047 has been demonstrated; and

(3) Unless otherwise specified, with one engine inoperative, at a bank angle not exceeding 5 degrees.

(d)(1) Sections 23.67(c)(1), 23.67(c)(3), and special condition SC 23.67 for takeoff; and

##### 3. SC 23.67, Climb: One Engine Inoperative

Instead of compliance with § 23.67(c)(2), the following applies:

(c)(2) Takeoff; landing gear retracted.

In the takeoff configuration existing at the point of the flight path at which the landing gear is fully retracted and in the configuration used in § 23.57 without ground effect, the steady gradient of climb may not be less than 2.4 percent at  $V_2$ , and with—

(i) The critical engine inoperative;

(ii) The remaining engine at the takeoff thrust available at the time the landing gear is fully retracted, determined under § 23.57, unless there is a more critical power operating condition existing along the flight path but before the point where the airplane reaches a height of 400 feet above the takeoff surface; and;

(iii) The weight equal to the weight existing when the airplane's landing gear is fully retracted, determined under § 23.57.

##### 4. SC 23.149, Minimum Control Speed

(d) The requirement to comply with § 23.149(d) is deleted.

(f) The requirement to comply with § 23.149(f) is not optional to the applicant, but is required to show compliance with special condition SC 23.51.

##### 5. SC 23.161, Trim

In addition to the requirements of § 23.161(c), the airplane must maintain longitudinal trim during the following:

(c)(1) A climb with—

(iii) Maximum continuous power at a speed not more than  $1.4 V_{S1}$ , with the landing gear retracted, and the flaps retracted, and

(iv) Maximum continuous power at a speed not more than  $1.4 V_{S1}$ , with the landing gear retracted, and the flaps in the takeoff position(s).

#### 6. SC 23.173, *Static Longitudinal Stability*

Instead of compliance with § 23.173(c), the following applies:

(c) The average gradient of the stable slope of the stick force versus speed curve may not be less than 1 pound for each 6 knots of calibrated airspeed.

#### 7. SC 23.177, *Static Directional and Lateral Stability*

Instead of compliance with § 23.177, the following apply:

(a) 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 for any symmetrical power condition at speeds from  $1.2 V_{S1}$  up to  $V_{FE}$ ,  $V_{LE}$  or  $V_{FC}/M_{FC}$  (as appropriate).

(b) The static lateral stability (as shown by the tendency to raise the low wing in a sideslip with the aileron controls free and for any landing gear position and flap position, and for any symmetrical power conditions) may not be negative at any airspeed (except speeds higher than  $V_{FE}$  or  $V_{LE}$ , when appropriate) in the following airspeed ranges:

- (1) From  $1.2 V_{S1}$  to  $V_{MO}/M_{MO}$ ;
  - (2) From  $V_{MO}/M_{MO}$  to  $V_{FC}/M_{FC}$  unless the Administrator finds the divergence is—
    - (i) Gradual;
    - (ii) Easily recognizable by the pilot; and
    - (iii) Easily controllable by the pilot.
- (c) In straight, steady, sideslips (unaccelerated forward slips) the aileron and rudder control movements and forces must be substantially proportional to the angle of the sideslip. The factor of proportionality must lie between limits found necessary for safe operation throughout the range of sideslip angles appropriate to the operation of the airplane. At greater angles, up to the angle at which full rudder control is used or when a rudder pedal force of 180 pounds is obtained, the rudder pedal forces may not reverse and increased rudder deflection must produce increased angles of sideslip. Unless the airplane has a yaw indicator, there must be enough banks accompanying side slipping to clearly indicate any departure from steady unyawed flight.

#### 8. SC 23.201, *Wings Level Stall*

Instead of compliance with § 23.201(d) and (e), the following apply:

(d) During the entry into and the recovery from the maneuver, it must be

possible to prevent more than approximately 20 degrees of roll and approximately 15 degrees of yaw by the normal use of the controls.

(e) Compliance with the requirements of this section must be shown under the following conditions:

(1) The flaps, landing gear, and speed brakes in any likely combination of positions and altitudes appropriate for the various positions.

(2) Thrust—

(i) Idle; and

(ii) The thrust necessary to maintain level flight at  $1.6 V_{S1}$  (where  $V_{S1}$  corresponds to the stalling speed with flaps in the approach position, the landing gear retracted, and maximum landing weight).

(3) Trim at  $1.4 V_{S1}$  or the minimum trim speed, whichever is higher.

(4) Representative weights within the range for which certification is requested.

(5) The most adverse center of gravity for recovery.

#### 9. SC 23.203, *Turning Flight and Accelerated Turning Stalls*

Instead of compliance with § 23.203(c), the following apply:

(c) Compliance with the requirements of this section must be shown under the following conditions:

(1) The flaps, landing gear, and speed brakes in any likely combination of positions and altitudes appropriate for the various positions.

(2) Thrust—

(i) Idle; and

(ii) The thrust necessary to maintain level flight at  $1.6 V_{S1}$  (where  $V_{S1}$  corresponds to the stalling speed with flaps in the approach position, the landing gear retracted, and maximum landing weight).

(3) Trim at  $1.4 V_{S1}$  or the minimum trim speed, whichever is higher.

(4) Representative weights within the range for which certification is requested.

(5) The most adverse center of gravity for recovery.

#### 10. SC 23.251, *Vibration and Buffeting*

Instead of compliance with § 23.251, the following apply:

(a) The airplane must be demonstrated in flight to be free from any vibration and buffeting that would prevent continued safe flight in any likely operating condition.

(b) Each part of the airplane must be shown in flight to be free from excessive vibration under any appropriate speed and thrust conditions up to  $V_{DF}/M_{DF}$ . The maximum speeds shown must be used in establishing the operating limitations of the airplane in accordance with special condition SC 23.1505.

(c) Except as provided in paragraph (d) of this special condition, there may be no buffeting condition, in normal flight, including configuration changes during cruise, severe enough to interfere with the control of the airplane, to cause excessive fatigue to the crew, or to cause structural damage. Stall warning buffeting within these limits is allowable.

(d) There may be no perceptible buffeting condition in the cruise configuration in straight flight at any speed up to  $V_{MO}/M_{MO}$ , except that stall warning buffeting is allowable.

(e) With the airplane in the cruise configuration, the positive maneuvering load factors at which the onset of perceptible buffeting occurs must be determined for the ranges of airspeed or Mach number, weight, and altitude for which the airplane is to be certified. The envelopes of load factor, speed, altitude, and weight must provide a sufficient range of speeds and load factors for normal operations. Probable inadvertent excursions beyond the boundaries of the buffet onset envelopes may not result in unsafe conditions.

#### 11. SC 23.253, *High Speed Characteristics*

Instead of compliance with § 23.253, the following apply:

(a) Speed increase and recovery characteristics. The following speed increase and recovery characteristics must be met:

(1) Operating conditions and characteristics likely to cause inadvertent speed increases (including upsets in pitch and roll) must be simulated with the airplane trimmed at any likely cruise speed up to  $V_{MO}/M_{MO}$ . These conditions and characteristics include gust upsets, inadvertent control movements, low stick force gradient in relation to control friction, passenger movement, leveling off from climb, and descent from Mach to airspeed limit altitudes.

(2) Allowing for pilot reaction time after effective inherent or artificial speed warning occurs, it must be shown that the airplane can be recovered to a normal attitude and its speed reduced to  $V_{MO}/M_{MO}$ , without—

(i) Exceptional piloting strength or skill;

(ii) Exceeding  $V_D/M_D$  or  $V_{DF}/M_{DF}$ , or the structural limitations; and

(iii) Buffeting that would impair the pilot's ability to read the instruments or control the airplane for recovery.

(3) There may be no control reversal about any axis at any speed up to  $V_{DF}/M_{DF}$ . Any reversal of elevator control force or tendency of the airplane to pitch, roll, or yaw must be mild and

readily controllable, using normal piloting techniques.

(b) *Maximum speed for stability characteristics*,  $V_{FC}/M_{FC}$ ,  $V_{FC}/M_{FC}$  is the maximum speed at which the requirements of § 23.175(b)(2), special condition SC 23.177, and § 23.181 must be met with flaps and landing gear retracted. It may not be less than a speed midway between  $V_{MO}/M_{MO}$  and  $V_{DF}/M_{DF}$  except that, for altitudes where Mach number is the limiting factor,  $M_{FC}$  need not exceed the Mach number at which effective speed warning occurs.

#### 12. SC 23.1505, *Airspeed Limitations*

Instead of compliance with § 23.1505, the following applies:

The maximum operating limit speed ( $V_{MO}/M_{MO}$ -airspeed or Mach number, whichever is critical at a particular altitude) is a speed that may not be deliberately exceeded in any regime of flight (climb, cruise, or descent), unless a higher speed is authorized for flight test or pilot training operations.  $V_{MO}/M_{MO}$  must be established so that it is not greater than the design cruising speed  $V_C/M_C$  and so that it is sufficiently below  $V_D/M_D$  or  $V_{DF}/M_{DF}$ , to make it highly improbable that the latter speeds will be inadvertently exceeded in operations. The speed margin between  $V_{MO}/M_{MO}$  and  $V_D/M_D$  or  $V_{DF}/M_{DF}$  may not be less than that determined under § 23.335(b) or found necessary in the flight test conducted under special condition SC 23.253.

#### 13. SC 23.1545, *Airspeed Indicator*

Instead of compliance with § 23.1545, the following applies:

The following markings must be made on each airspeed indicator:

A maximum allowable airspeed indication showing the variation of  $V_{MO}/M_{MO}$  with altitude or compressibility limitations (as appropriate), or a radial red line marking for  $V_{MO}/M_{MO}$  must be made at the lowest value of  $V_{MO}/M_{MO}$  established for any altitude up to the maximum operating altitude for the airplane.

#### 14. SC 23.1583, *Operating Limitations*

Instead of compliance with § 23.1583(a)(1), (a)(2), and (c)(4)(i) respectively, the following apply:

(a)(1) Information necessary for the marking of the airspeed limits on the airspeed indicator as required in special condition SC 23.1545, and the significance of each of those limits and of the color-coding used on the airspeed indicator.

(a)(2) The speeds  $V_{MC}$ ,  $V_O$ ,  $V_{LE}$ ,  $V_{FE}$ ,  $V_{LO}$ , if established, and their significance.

(c)(4)(i) The airplane complies with the requirements of special condition SC 23.63; and

#### 15. SC 23.1585, *Operating procedures*

(c)(3) The requirement to comply with § 23.1585(c)(3) is deleted.

Issued in Kansas City, Missouri on April 16, 2004.

**James E. Jackson,**

*Acting Manager, Small Airplane Directorate, Aircraft Certification Service.*

[FR Doc. 04-9514 Filed 4-26-04; 8:45 am]

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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 25

[Docket No. NM273; Special Conditions No. 25-260-SC]

#### Special Conditions: Boeing Model 777 Series Airplanes; Overhead Crew Rest Compartment Occupiable During Taxi, Take-off, and Landing

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

**ACTION:** Final special conditions.

**SUMMARY:** These special conditions are issued for Boeing Model 777 series airplanes. These airplanes will have novel or unusual design features because of the installation of an overhead crew rest compartment that will be occupiable during taxi, takeoff, and landing. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for these design features. 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:* April 14, 2004.

**FOR FURTHER INFORMATION CONTACT:** Mike Thompson, FAA, Airframe/Cabin Safety Branch, ANM-115, Transport Standards Staff, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue, SW., Renton, Washington, 98055-4056; telephone (425) 227-1157; facsimile (425) 227-1100.

#### SUPPLEMENTARY INFORMATION:

##### Background

On June 25, 2002, the Boeing Commercial Airplane Group (BCAG), P. O. Box 3707, Seattle, Washington, 98124, applied for a change to Type Certificate No. T00001SE to install an overhead crew rest (OHCR)

compartment, in Boeing Model 777 series airplanes. The OHCR compartment will be occupiable during taxi, takeoff, and landing (TT&L). The Boeing Model 777 series airplanes are large, twin-engine airplanes with various passenger capacities and ranges depending upon airplane configuration.

The OHCR compartment is located in the overhead space above the main passenger cabin immediately aft of the first pair of main deck emergency exits (Door 1) and includes a maximum of two private berths and two seats. Occupancy of the OHCR compartment will be limited to a maximum of four crewmembers during flight and two flight crewmembers, one in each seat, during TT&L.

The OHCR compartment will be accessed from the main deck by stairs through a vestibule. In addition, a secondary evacuation route, which opens directly into the main passenger seating area, will be available from the OHCR compartment as an alternate route for evacuating occupants of the OHCR compartment. A smoke detection system and an oxygen system will be provided in the compartment. Other optional features, such as a sink with cold drink stowage or a lavatory, may be provided as well.

While the installation of an OHCR compartment is not a new concept for large transport category airplanes, each OHCR compartment has unique features based on design, location, and use on the airplane. Previously, OHCR compartments have been installed and certified in Boeing Model 777 series airplanes in the main passenger seating area, in the overhead compartment above the main passenger seating area, and below the passenger seating area within the cargo compartment. On April 9, 2003, the FAA issued Special Conditions No. 25-230-SC for an OHCR compartment immediately aft of the Door 1 exits, and an overhead flight attendant rest compartment adjacent to Door 3 in Boeing Model 777 series airplanes. These new special conditions address an OHCR compartment at the same location aft of Door 1 as in the April 2003 special conditions, except that they address occupancy by trained flightcrew during TT&L.

#### Type Certification Basis

Under the provisions of § 21.101, Amendment 21-69, effective September 16, 1991, Boeing Commercial Airplane Group must show that Model 777 series airplanes, as changed, continue to meet the applicable provisions of the regulations incorporated by reference in Type Certificate Data Sheet No. T00001SE or the applicable regulations