

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
KANSAS CITY, MISSOURI 64106

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In the matter of the petition of *
BEECH AIRCRAFT CORPORATION *
for an exemption from § 23.807(d)(1)(i) *
of the Federal Aviation Regulations *
*

Regulatory Docket No. 033CE

GRANT OF EXEMPTION

By letters dated February 5 and March 23, 1987, Mr. W. H. Schultz, Post Office Box 85, Wichita, Kansas 67201, petitioned on behalf of the Beech Aircraft Corporation for an exemption from § 23.807(d)(1)(i) of the Federal Aviation Regulations (FAR) to permit certification of a Model 2000 Airplane with one emergency exit in the cabin opposite the main entrance door, which will not comply with § 23.807(d)(1)(i). The Beech Model 2000 is a twin-turbopropeller engine, nine-passenger airplane intended to be certificated in the commuter category.

Section of the FAR affected:

Section 23.807(d)(1)(i) requires, for commuter category airplanes having a total passenger seating capacity of 15 or less, two emergency exits, one on each side of the cabin, in addition to the passenger entrance door.

The petitioner's supportive information is as follows:

"BACKGROUND

The Model 2000 design and development commenced in late 1982. Type certificate application for normal category approval was presented to FAA at the Preliminary Type Certification Board session number one on 16 February 1983. Session number two of the Preliminary T.C. Board was held on 8 March 1983. Due to design changes, a revised type certificate application for normal category approval was presented to FAA on 1 February 1984 and the first interim Type Certification (T.C.) Board was held on 28 March 1984. The second and third interim T.C. Boards were held on 6 March 1985 and 13 March 1986, respectively. As the design,

development and testing program progressed, it became apparent that type certification could not be accomplished within the time limit established under FAR 21.17(b); the deadline was 1 February 1987. This being so, on 18 June 1986, Beech requested and was granted a type certification time extension in accordance with FAR 21.17(c)(2). Throughout the more than four year development and testing period, the airplane design empty weight increased appreciably, thus necessitating the need to apply for type certification under the provisions of the commuter category regulations adopted into Part FAR 23 by Amendment 34. However, these rules were not adopted and available for use until 8 January 1987 and 17 February 1987, respectively. The final content of these rules was not known to Beech until 12 January 1987, nearly three years after the docket comment period closed on 14 February 1984. Amendment 34 to FAR Part 23 adds airworthiness standards for airplanes with a maximum seating capacity, excluding pilot seats, of 19 or less, a maximum certified takeoff weight of 19,000 pounds or less, and requires type certification compliance with the International Civil Aviation Organization (ICAO) Annex 8, Part III requirements which apply to airplanes weighing in excess of 5700 kilograms (12,566 pounds). The Beech Model 2000 will be certified to FAR Part 23, including Amendment 34 and has, since 1 June 1986, been on a certification program aimed at compliance with the commuter category requirements by August 21, 1987.

"Amendment 34 to FAR Part 23 added the requirement, "In addition to the passenger entrance door - For a total passenger seating capacity of 15 or less, an emergency exit, as defined in Paragraph (b) of this section is required on each side of the cabin." The Model 2000 is designed for a maximum passenger configuration of nine and, from its inception more than four years ago, has been configured with one emergency exit in the cabin side wall opposite the main cabin entrance door. In addition, the Model 2000 has incorporated cabin interior design features that improve occupant safety and egress which are aligned with the requirements of Part 25 cabin interior regulations. In lieu of complying with the requirements of FAR 23.807(d)(1)(i), the petitioner proposes to comply with the stricter Part 25 criteria, in the following:

1. Emergency Exits Access, Design and Construction

The Model 2000 provides one (a) emergency exit per Part 25.807(c). This exit is 26 inches in width and an average 25 inches in height and exceeds the size requirements of 19 inches width and 26 inches height specified in Part 25.807(a)(4).

"The entrance door is available as a second emergency exit and is 28 inches wide by 56 inches high (floor to lintel), and exceeds the size requirements of Part 25.807(a)(1).

"The exits are located such that all passengers have easy access during emergency evacuation. The emergency exit qualified entrance door on the left side of the fuselage is immediately aft of the pilot compartment. The emergency exit is located on the right side of the fuselage and is over the wing just forward of the most aft two seats (in a double club seating arrangement) or just forward of the aft four seats (when seats face forward). No seat or seat back obstructs

access to the emergency exit or entrance door. Passengers are able to safely exit through the 26 inch wide emergency exit without having to turn their bodies, as is customary with a 19 inch wide exit. In addition, the exterior step down to the wing is less than 6 inches, thus enhancing safety of the evacuation path. Since the thick main wing carry-through is aft of the cabin section (beneath the aft baggage compartment), there are no aisle steps or protrusions to trip over, nor is it likely that either exit would be blocked due to the natural protection afforded by the forward wing (forward of the crew station) and the aft wing (aft of the passenger cabin). The Model 2000 design position of the forward and aft wings provides a configuration highly resistant to turnover and rollover. The graphite epoxy hardened fuselage construction also resists distortion during emergency landing and minor crash circumstances. Also, during partial or total failure of the landing gear, both exits can be opened sufficiently for escape because of the support given by the fuselage belly and wing tips. In those instances where rescue comes from the outside, the emergency escape hatch (a plug type door with no hinges) is capable of being pushed in from outside the airplane without actuating the latch.

"These design provisions are in compliance with FAR Part 25.807(b) and (c), 25.809(a) through (e) and (g) and 25.813(a), (c) and (e). A test demonstration would be required to verify compliance with pertinent paragraphs of 25.809.

2. "Emergency Exits - Marking and Lighting

The Model 2000 emergency exit and entrance door are marked and lighted in accordance with Part 25.811 and 25.812, respectively. There are electrically-illuminated exit signs over the emergency exits which are normally powered from ship's power, but automatically illuminate to a higher intensity on emergency impact. In addition, there is an exit locator sign in the forward center aisle to assure visibility of the main cabin door exit sign from each seat in the cabin. The exit signs and interior markings comply fully with the appropriate parts of Sections 25.811 and 25.812. Beech will incorporate a self-contained light assembly and power pack with the same features as the exit lights which will provide illumination of the main cabin door handle. All emergency exit light power packs will be Nicad battery powered and trickle charged from ship's power. The power packs will automatically be isolated from ship's power on impact and will supply illumination for ten (10) minutes to assure compliance with FAR 25.812(i) and (j) and (k) and FAR 25.812(1)(2).

3. "Aisle Width

Minimum aisle width requirements in Part 25.815 are 12 inches below a height above floor distance of 25 inches and 15 inches above that height when the cabin contains 10 or less passengers. Minimum aisle width requirements, Part 23.815, are 9 inches below a height above floor distance of 25 inches and 15 inches above that height when the cabin contains 10 to 19 passengers. No minimum aisle requirements exist in Part 23.815 for cabins with less than 10 passengers. The

Model 2000 has a maximum of 9 passenger seats and a minimum aisle width of 12 inches below the 25 inch level and 15 inches above the 25 inch level. This clearly provides increased safety in emergency exiting of the aircraft. The Model 2000 design complies with Part 25.815.

4. "Compartment Interiors

Model 2000 interior design complies with both Part 25.853(a), (b) and (e) and Part 23.853(d). Since each of these are identical, petitioner's consideration of Part 25.853(a), (b) and (e) is unnecessary with respect to this exemption request.

5. "Cargo and Baggage Compartments

Model 2000 design does not permit the carriage of cargo or baggage outside the main cabin area. All cargo or baggage will be carried inside the main cabin, which, in turn, must comply with either the requirements of 25.853(a), (b) and (e) or 23.853(d). It is, therefore, unnecessary to consider compliance with Part 25.855(a) with respect to this exemption action.

6. "Emergency Evacuation

Part 23.803 requires a 90 second evacuation demonstration. Part 25.803, on the other hand, requires a similar demonstration, but under much more realistic and demanding conditions, such as a requirement for a detailed mix of passengers (both young and old), use of seat belts, allowing no previous experience, requiring minor obstructions in the aisle simulating that which might occur in a crash landing, and a requirement to use the applicant's approved evacuation procedures. Because of the manner in which FAA currently administers its policy for the conduct of an emergency evacuation demonstration on SFAR Part 41 airplanes and is expected to conduct on commuter category airplanes (i.e., AC20-118), the criteria of Part 25.803 are satisfied. In this regard, the Model 2000 can comply with an emergency evacuation demonstration conducted in accordance with Part 25.803.

"The petitioner requests permanent exemption to FAR 23.807(d)(1)(i) to allow the Model 2000 to be certified in the commuter category without having to provide two emergency exits in the cabin in addition to the entrance door (which also serves as an emergency exit). The maximum number of passengers a Model 2000 can accommodate is limited to 9, well below the maximum of 15 allowed by FAR 23.807(d)(1)(i).

"Beech began the design, development and testing of the Model 2000 more than four years ago. The design originated and has progressed to date with one emergency exit in accordance with the requirements of FAR Part 23 as it was in effect before adoption of Amendment 23-34. Beech is now on application for certification of the Model 2000, in accordance with the requirements of FAR 23, as amended by Amendment 34, which adds the commuter category. However, in lieu of compliance with section 23.807(d)(1)(i), Beech proposes to comply with FAR Part 25 sections, as

enumerated above and, thereby, uphold the level of safety equal to or greater than FAR Part 23. Petitioner contends that requiring an additional emergency exit on the left side of the cabin in order to comply with FAR 23.807(d)(1)(i) would produce an undue burden on the public and Beech Aircraft because the airplane design and development are now substantially complete. To require the additional exit now would delay the certification program beyond the 21 August 1987 type certification date, and would increase development costs, production unit cost, weight and complexity. These would affect the customer in airplane price as well as operating and maintenance costs. Further, petitioner states that the U.S. balance of trade competitive position may also be directly affected. To require the additional emergency exit on the left side of the cabin (in addition to the present main entrance door and emergency exit) as required by FAR 23.807(d)(1)(i) would produce the same level of safety as that generated from compliance with the criteria proposed in this petition. Finally, a large number of Part 25 airplanes, including the most recently certified Cessna 500/600 series and Beechcraft Model 400, are type certified utilizing the latest Part 25 requirements, as described herein and require only one emergency exit in addition to the entrance door."

Comments to published petition summary:

A summary of this petition was published in the Federal Register for public comment on March 19, 1987. The comment period closed April 8, 1987. Comments were received from Fairchild Aircraft Corporation in support of Beech's petition for exemption. That commenter stated that the exemption should be granted without requiring Beech to provide any additional safety features to compensate for the omission of the second emergency exit, and that either § 23.807(d)(1)(i) be revised or policy be issued to interpret § 23.807(d)(1)(i) to require only one emergency exit for 9 passengers or less.

In support of their position, Fairchild states that the announced purpose of Amendment 23-34 was to incorporate existing Special Federal Aviation Regulations (SFAR) 41 requirements into Part 23 without significant change (except for additional performance requirements). The commenter agreed that § 23.807(d)(1)(i) was an accurate incorporation of SFAR 41 paragraph (5)(e)(g)(1), but the commenter contends that SFAR 41 paragraph (5)(e)(g)(1) is incomplete.

The commenter states that, in July 1980, the FAA determined that the intent of the subject SFAR 41 paragraph was ". . . to require an emergency exit, as defined by FAR 23.807(b) on each side of the cabin for a total seating capacity of 12 to 15." The commenter states that this interpretation of the regulation was used to certify their SA227-TT Airplane with exactly the same arrangement as the Beech Model 2000.

The commenter argues that § 23.807(d)(1)(i), as published and currently interpreted, amounts to a substantive and restrictive change without proper public participation and that, therefore, Beech's petition for exemption should be granted.

The FAA has reviewed the basis for Fairchild's comments and provides the following analysis:

By letter of June 13, 1980, Swearingen Aviation Corporation (now Fairchild) requested that the FAA provide an interpretation of SFAR 41 relative to the number of emergency exits required for their SA226-T(B) Airplane. The SA226-T(B) was a growth version of the Merlin IIIB Airplane, resulting in a nine passenger airplane weighing 14,000 pounds.

By letter of July 21, 1980, the FAA stated that, relative to paragraph 5(e)(g)(1) of SFAR 41, "the intent was to require an emergency exit, as defined by § 23.807(b) on each side of the cabin, for a total seating capacity of 12 to 15. Accordingly, the emergency exit requirements of § 23.807(a)(1) or (3) are applicable when the total seating capacity of an airplane is eleven or less. Therefore, the proposed Swearingen Model SA226T(B), 14,000 pound, eleven-place Merlin III(c) version should comply with § 23.807(a)(1)."

As a result of FAA's response, the Model SA226T(B) Airplane was certificated with only one emergency exit, in addition to the main entry door, without having to provide any additional compensating safety features. The FAA has no records of adverse service experience as a result of certificating this airplane in accordance with the previously cited policy.

The Federal Aviation Administration's (FAA) analysis is as follows:

To obtain the exemption, the petitioner must show, as required by § 11.25(b)(5) of the Federal Aviation Regulations, that: (1) granting the request is in the public interest, and (2) if appropriate, why the grant of the exemption would not adversely affect safety, or that a level of safety will be provided which is equal to that provided by the rule from which the exemption is sought.

The FAA has carefully reviewed all of the information contained in the petitioner's request for exemption. The FAA's analysis/summary is as follows:

The scope of the Notice of Proposed Rulemaking (NPRM) No. 87-3 (48 FR 52010) that resulted in Amendment No. 23-34 stated, in pertinent part, "The scope of this NPRM is limited to the proposals which are considered appropriate as airworthiness and noise standards and operating rules for commuter category propeller-driven, multiengine airplanes. Existing airworthiness standards of Part 23, SFAR No. 41, as supplemented by those airworthiness standards necessary to comply with the requirements developed by the International Civil Aviation Organization (ICAO), and appropriate sections of Appendix A of Part 135, are the foundation for the proposals. The FAA proposes to integrate into Part 23 those additional airworthiness standards of SFAR No. 41 and the appropriate sections of Appendix A of Part 135 not previously adopted into Part 23. It is not intended to propose substantive changes to the existing Part 23 airworthiness standards or to the airworthiness standards being integrated into Part 23 by this rulemaking except as discussed in this notice."

Consistent with the scope of Notice No. 87-3, the FAA accurately integrated paragraph (5)(e)(g)(1) of the SFAR 41 into § 23.807(d)(1)(i). However, the FAA recognizes that previous policy has been issued indicating that two emergency exits, in addition to the main entry door, are not required for SFAR 41 airplanes having nine passenger seats or less. Inadvertently, the FAA did not carry this interpretation of SFAR 41 into the current commuter category requirements of Part 23; but recognizes that such an interpretation is appropriate.

The FAA intends to propose a rule change to § 23.807(d)(1)(i) of Part 23 Amendment 23-34 to require a single emergency exit, in addition to the main entry door, for commuter category airplanes having nine passenger seats or less. The FAA is aware of Beech Aircraft Corporation's intent to provide the additional cabin safety features beyond those required in Part 23 as described in the Petitioner's supportive information section of this Grant of Exemption. Beech is encouraged to continue to provide such additional cabin safety features, but the inclusion of such cabin safety features are not a basis for this exemption.

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in Sections 313(a) and 601(c) of the Federal Aviation Act of 1958, as amended, delegated to me by the Administrator (14 CFR 11.53), Beech Aircraft Corporation is hereby granted an exemption from § 23.807(d)(1)(i) of the Federal Aviation Regulations to the extent necessary to permit the type certification of its Model 2000 Airplane in the commuter category with one emergency exit installed on the cabin opposite the main entrance door provided the Beech Model 2000 Airplane is limited to nine passenger seats.

Issued in Kansas City, Missouri on September 4, 1987.


Jerold M. Chavkin, Acting Director
Central Region