

HQ 44

FEDERAL AVIATION AGENCY

FLIGHT STANDARDS SERVICE

[14 CFR Parts 40, 41, 42]

[Regulatory Docket No. 1849; Notice No. 63-26]

NOTICE OF PROPOSED RULE MAKING

Operation of Three-engine Airplanes

The Federal Aviation Agency has under consideration a proposal to effect such amendments of the air carrier operating rules in Parts 40, 41, and 42 of the Civil Air Regulations as are considered necessary and/or appropriate in view of the forthcoming introduction of three-engine turbojet airplanes into air carrier service.

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 regulatory docket or notice number and be submitted in duplicate to the Federal Aviation Agency, Office of the General Counsel, Attention Rules Docket, Room A-103, 1711 New York Avenue, N.W., Washington 25, D.C. All communications received on or before September 19, 1963, will be considered by the Administrator before taking action upon the proposed rule. The proposals contained in this notice may be changed in the light of comments received. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons.

Certain of the air carrier rules contained in Parts 40, 41, and 42 differentiate between airplanes in accordance with the number of engines which power such airplanes. In some of these rules, mention is made of two- and four-engine airplanes only. In other sections, three-engine airplanes are specifically mentioned and considered in the same category as two-engine airplanes. It is quite possible that the newly emerging three-engine jet airplanes, because of their overall performance and the general dependability of turbine engines, should be considered in some instances in the same category as four-engine airplanes insofar as the regulations are concerned.

Sections 40.62 and 41.62 generally restrict two- and three-engine airplanes from operating at a distance greater than 60 minutes of flight, at one-engine-inoperative speed, from an adequate airport. While these rules do not so limit the operation of four-engine airplanes, §§ 40.75, 41.75, and 42.75 limit four-engine piston-powered airplanes to operations within 90 minutes, at all-engines-operative speed, from an adequate airport unless able to meet the two-engines-inoperative climb requirements specified therein. Air carrier operations with turbine-powered airplanes certificated under Special Civil Air Regulation No. SR-422B are governed in this respect by the requirements

of § 40T.83(b) in lieu of those specified in §§ 40.75, 41.75, or 42.75. This section limits all turbine airplanes, irrespective of the number of engines, to operations within 90 minutes from an adequate airport unless able to meet the two-engines-inoperative climb gradients specified therein.

In view of the fact that two-engines-inoperative flight is possible with three-engine airplanes and the fact that loss of one engine on such airplanes does not result in single-engine operation, it appears that safety would not be adversely affected if such airplanes were permitted to operate at distances equal to 90 minutes from an adequate airport in the same manner as is permitted in the case of four-engine airplanes. However, in order to operate at distances greater than 90 minutes from such an airport, three-engine airplanes should be required to meet the same two-engines-inoperative climb requirements as required in the case of four-engine airplanes. It is, therefore, proposed to amend §§ 40.62(a) and 41.62(a) by deleting the reference therein to three engine airplanes and to amend §§ 40.75, 41.75, and 42.75 by broadening the applicability of these sections to include both three- and four-engine piston-powered airplanes. Section 40T.83(b) is applicable to the operation of both three- and four-engine turbine-powered airplanes and need not, therefore, be amended.

Sections 40.363 and 41.363 require that a landing be made at the nearest suitable airport in point of time in the event of an engine's failure or precautionary shutdown. However, the pilot of an airplane having four or more engine is given an amount of discretionary authority to continue the flight in such a situation. It is apparent that in the event of an engine failure or precautionary shutdown, the pilot of either a three- or four-engine airplane has a wider choice of safe courses of action than does the pilot of a two-engine airplane. The safer course of action for such pilot of a three- or four-engine airplane may require continuance of flight beyond the nearest suitable airport in point of time. Therefore, it is proposed to amend §§ 40.363(b) and 41.363(b) by including three-engine airplanes within the scope thereof.

Sections 40.388 and 41.388 require the naming of an alternate airport for departure under certain weather conditions. In the case of two- or three-engine airplanes, such alternate must be within one hour of flying time at one-engine-inoperative speed.

On the other hand, in the case of four-engine airplanes, such alternate may be located as far as two hours away from the take-off airport. In considering the types of situations which would dictate a need to proceed to such an alternate, as well as the characteristics of turbojet airplanes, there appears to be a greater similarity between three- and four-engine airplanes than that which exists between two- and three engine airplanes. It is, therefore, proposed to amend §§ 40.388 and 41.388 by deleting all references to three-engine airplanes in paragraph (a)(1) and by including three-engine airplanes within the scope of paragraph (a)(2) of those sections.

In determining pilot skill and proficiency, in accordance with present regulations pertaining to pilot training and proficiency checks and to the issuance of a type rating, pilots are required to fly with 50 percent of the powerplants, concentrated on one side, inoperative or in a simulated inoperative condition. As such a configuration is physically impossible in a three-engine airplane, this requirement must be changed with respect to such airplanes. In order to insure an adequate level of pilot skill and proficiency, it is proposed to amend §§ 40.282(b)(1)(ii), 40.302-1(j) and (v), 41.282, 41.302, 42.44-2(v), and 42.45(b) to require flight in three-engine airplanes with the center engine and one outboard engine in a simulated inoperative condition.

In proposing this requirement, it is recognized that only a limited amount of flight experience has been gained to date on the new three-engine turbojet type airplanes. However, while it is not anticipated that the handling characteristics of these airplanes will make such a maneuver unreasonably difficult to accomplish, the Agency, prior to adoption of such a requirement, will assure that a landing with the simulated failure of the center engine and one outboard engine is in fact a reasonable requirement.

The specific skill requirements for issuance of a type rating in accordance with Part 61 [New] of the Federal Aviation Regulations are set forth as guidelines in Advisory Circular 61-1, Attachment 2. Contained therein is the policy applicable to multiengine flight tests, that a landing be demonstrated with 50 percent of the available power units; the simulated loss of power concentrated on one side. These guidelines will also be amended in the case of airline transport pilot certificate and type rating flight checks conducted in three-engine airplanes.

In the case of weather minimums authorized air carriers for takeoff and landing during instrument flight conditions, differentiation is made in the establishment of specific minimums for various groups of airplane types, based in part on the number of en-

gines or powerplants. The Flight Standards Service is presently engaged in an overall review of all weather minimums applicable to air carrier operations. As a part thereof, specific consideration has been given to the weather minimums which should be made applicable to three-engine airplanes. At present, it is our belief that three- and four-engine airplanes should be considered as being in the same category insofar as weather minimums are concerned.

Certain changes to Subpart B of Part 63 [New] of the Federal Aviation Regulations, which sets forth the requirements for issuance of a flight engineer certificate, are considered both necessary and appropriate in view of the existence of both two- and three-engine airplanes on which a flight engineer is included as a member of the flight crew. Such amendments to Part 63 are being proposed in a separate notice of proposed rule making.

In consideration of the foregoing, it is proposed to amend Parts 40, 41 and 42 of the Civil Air Regulations as follows:

1. By amending § 40.62(a) of Part 40 by deleting from the title and the first sentence thereof the words "or three-".
2. By amending § 40.75 by deleting from the second sentence of the introductory paragraph the word "four" and inserting in lieu thereof the word "three".
3. By amending § 40.282(b)(1)(ii) by inserting between the words "in a" and "four-engine" the phrase "three- or".
4. By amending § 40.302-1(j) by adding between the first and second sentence a new sentence to read "In the case of a three-engine airplane, maneuvering will be accomplished with a loss of the center and one outboard engine."
5. By amending § 40.302-1(v) by adding before the last sentence a new sentence to read "In the case of a three-engine airplane, the airplane shall be maneuvered to a landing while utilizing one of the outboard engines, and with the center engine and the other outboard engine in a simulated inoperative condition."
6. By amending § 40.363(b) by deleting from the introductory sentence the numeral "4" and inserting in lieu thereof the numeral "3".
7. By amending § 40.388(a) by deleting from the title of subparagraph (1) the words "or 3", and by deleting from the title of subparagraph (2) the numeral "4" and inserting in lieu thereof the numeral "3".
8. By promulgating amendments to Parts 41 and 42 of the Civil Air Regulations similar to those proposed herein.

These amendments are proposed under the authority of sections 313(a), 601, and 604 of the Federal Aviation Act of 1958 (49 U.S.C. 1354, 1421, 1424).

  
Director,  
Flight Standards Service

Issued in Washington, D.C., on July 11, 1963.