

AERONAUTICS BULLETIN NO. 7-J

SPECIAL REQUIREMENTS FOR AIR LINE AIRCRAFT

Section 1. Scope of Requirements.

(A) The requirements contained herein are supplemental to the requirements contained in Aeronautics Bulletin No. 7-A, "Airworthiness Requirements for Aircraft", and are a part of the Air Commerce Regulations specified in Aeronautics Bulletin No. 7.

(B) All air line aircraft, as defined in Section 2, are subject to the requirements outlined herein, in addition to the airworthiness requirements specified in Aeronautics Bulletin No. 7-A.

(C) The operation of air line aircraft is subject to the specifications of Aeronautics Bulletin No. 7-E, "Air Commerce Regulations Governing Scheduled Operation of Interstate Air Line Services".

Section 2. Definition of Air Line Aircraft.

Air Line aircraft are defined as aircraft engaged in scheduled operation of passenger air transportation in interstate air commerce.

Section 3. Procedure for Approval and Licensing.

(A) A manufacturer or operator of an aircraft which has previously been approved as airworthy in accordance with the specification of Aeronautics Bulletin No. 7-A, "Airworthiness Requirements for Aircraft", may apply to the Secretary of Commerce for approval and rating as an air line aircraft in accordance with the regulations contained herein. Forms for such application will be furnished upon request.

(B) Upon receipt of such an application a representative of the Department of Commerce will be assigned to make such inspections and make or witness such tests as are necessary to determine conformity with these regulations.

(C) Upon receipt, examination, and approval of appropriate reports and data subsequent to the inspections and tests a notice of approval as an air line aircraft will be forwarded to the applicant.

(D) A manufacturer or operator of an aircraft for which such notice of approval has been issued shall substitute the capital letter T in place of the letter C in the license number displayed on the specific aircraft in question, as an integral part of the license number, and license cards issued by the Department of Commerce will be marked accordingly.

(E) Aircraft for which the letter T has been assigned in accordance with these regulations may be used for scheduled transportation of passengers, provided that the operator shall first obtain approval of the proposed operation in accordance with the specifications of Aeronautics Bulletin No. 7-E.

Section 4. Structural Requirements.

(A) The windows and windshield of the pilot's compartment shall be so arranged as to provide unobstructed forward vision under all conditions and, to accomplish this, particular attention should be paid to the following detail requirements:

(1) Windshields shall be installed so that they may be easily opened in flight and shall be so arranged that the air stream and snow or rain are deflected across the opening except that windshields which provide equivalent results will be given consideration.

(2) The pilot's compartment shall be free from glare or reflections which would interfere with the vision of the pilot or co-pilot, particularly while flying at night.

(B) The pilot's compartment shall be free from leakage when the airplane is flying in rain or snow.

(C) Oxygen and/or supercharged cabins shall be provided for crew and passengers above certain altitudes. (See Aeronautics Bulletin No. 7-E).

(D) Any aircraft in which the pilot is entirely separated from the passengers shall be provided with a suitable means of communication between pilot and passengers.

Section 5. Equipment.

(A) In addition to the equipment and accessories specified in Aeronautics Bulletins No. 7 and No. 7-A, the following equipment is required for flying over land:

(1) Approved individual seat belts; easily adjustable, shall be provided for each passenger. (Note: this differs from Aeronautics Bulletin No. 7-A only in that individual belts shall be used for each passenger).

(2) Two approved type fire extinguishers of at least one quart capacity each, or their equivalent, shall be installed in each air line aircraft. One such extinguisher shall be so located as to be readily available to the crew and the other shall be located near the main external cabin door where it shall be readily available to passengers and ground rescue personnel. *

(3) Fire-extinguishing apparatus of an approved type shall be provided for each engine compartment. *

(4) Suitable approved means for preventing the formation of ice on exposed surfaces of the aircraft shall be provided. **

(5) In addition to a battery or batteries, an adequate generator shall be provided. This generator shall be engine-driven unless an approved equivalent system is provided.

(6) Where smoking is permitted, suitable ash containers shall be provided, with proper signs. If smoking is not permitted, "No Smoking" signs shall be conspicuously posted.

(B) For flying over water, the same equipment is to be carried as for flying over land and, in addition to the equipment required in Aeronautics Bulletins Nos. 7 and 7-A, emergency rations, approved signal flares, and/or rockets may be required. Life preservers or approved flotation devices shall be provided for each person on board.

* Note: Fire extinguishing equipment approved by the Underwriters Laboratories is considered to be of an approved type.

** Note: When external inflatable rubber covers are used for this purpose along the leading edge of exposed surfaces the weight of the external covers only may be neglected in computing license weights. The weights of all other parts of the installation shall be added to the empty weight of the aircraft.

Section 6. Operation and Maintenance.

(A) A handbook or manual containing descriptive matter and instructions for operation and maintenance of the specific air line aircraft for which approval is requested shall be submitted, in duplicate, with the application.

(B) The handbook described in (A) above shall contain the following information in addition to such other data of a similar nature as may be considered advisable or necessary by the Department of Commerce in particular cases:

(1) Detailed descriptions, including diagrams and/or photographs, of all power plant, heating and ventilating, plumbing, communications, lighting and control systems together with instructions for their use, inspection, maintenance, and overhaul.

(2) Descriptions, including drawings and/or photographs, of important connections between structural units together with instructions for the maintenance, disassembly, inspection, overhaul and reassembly of the units in question.

(3) Descriptions, including drawings and/or photographs of mechanisms, except engine parts, which may require periodic adjustment, such as propellers, shock absorber struts and automatic pilots, together with instructions for their care and adjustment.

(4) General descriptive material and instructions for the care of the complete aircraft including lubricating charts and diagrams showing the inspection openings or doors.

(5) General instructions and illustrations for the use of pilots and mechanics including a description of control and instrument locations, together with their meaning and use, the location of towing and hoisting attachments, walkways and steps, tire pressures, means for lashing down, rules for stowing of cargo, and the operation of various safety devices such as fire extinguishing systems and emergency exits.

(6) General instructions to pilots on how to fly in order to get best results from the aircraft.

(7) Lists of approved standard and special equipment.

(C) A copy of the document described in paragraphs (A) and (B) shall be furnished with each aircraft by the manufacturer.

(D) Change notices or similar documents shall be issued by the manufacturer to supplement the handbook described herein and to form a part of the Department of Commerce file when and if changes to previously approved air line aircraft are found necessary or advisable, and approved.

Section 7. Instruments.

(A) Air line aircraft shall be equipped, for day time flying, with the following instruments, which shall be of an approved type and properly installed and calibrated:

(1) A bank and turn indicator.

(2) An instrument that will indicate the degree of bank and pitch except that, where night flying is not authorized, this instrument is recommended but not required.

(3) An instrument that will indicate amount of turn.

(4) A compass, properly damped and compensated.

(5) An airspeed indicator, with electrically heated pitot tube or equivalent.

(6) A climb indicator.

(7) A sensitive type altimeter, and, in addition, one of the conventional type, both of which shall be adjustable for barometric pressure. The use of two sensitive type altimeters is permissible.

(8) A free air thermometer of the distance type with an indicating dial mounted to the cockpit. The temperature pickup element shall be so mounted as to register accurate temperature indications on the dial in the cockpit.

(9) A clock.

(10) A complete set of engine instruments, as required by Aeronautics Bulletins Nos. 7 and 7-A, and, in addition, a manifold pressure gauge where supercharged engines are used.

(B) The instruments listed in Section (A), (1), (2), and (3) above shall have two different sources of energy, at least one of which shall be power driven. Both sources shall meet the instrument manufacturers' requirements as to pressure. The method of power installation shall be such that, in the event of a broken line or similar failure from one source of energy, this will not interfere with the proper functioning of these instruments by means of the remaining source of energy.

(C) For night flying the same instruments are required as for day flying and, in addition, electric landing lights, at least one warning light directed in line of flight, cabin lights, instrument board lights with rheostat control or equivalent, approved position lights, (all lights to be controlled from the pilot's cockpit), two flash lights of adequate size, and two 3-minute flares of an approved type, or a combination of one approved 3-minute flare with three approved 1-1/2 minute flares.

Section 8. Performance Tests.

(A) Specific requirements for the performance of certain types of aircraft are outlined in Aeronautics Bulletin No. 7-E, with reference to the characteristics of the authorized routes over which the aircraft are to be operated. All licensed aircraft are required to comply with the performance requirements specified in Aeronautics Bulletin No. 7-A.

(B) For the purpose of rating air line aircraft, the following characteristics shall be determined in the presence of an authorized representative of the Department of Commerce. All test data shall be converted to standard atmospheric conditions and still air. The test reports which shall be prepared by the manufacturer and signed by the authorized Department of Commerce inspector, shall include all necessary information, including original observations and the calculations used for reducing them to standard conditions, and shall be submitted as a part of the data supporting an application for approval of a proposed air line aircraft. The test and computation methods used shall conform to those used and recommended by the Army Air Corps until such time as other methods may be developed by the Bureau of Air Commerce.

(1) Take-off performance obtained with all engines functioning normally.

(a) The horizontal distance required for acceleration from a standing start to the speed of best climb angle with one engine dead* with light load** and at maximum authorized gross weight.

* Note - Obtained in 2(a).

** Note - Wherever light load is referred to in this section it shall be interpreted as representing the lightest weight at which the aircraft can safely be flown, i.e., the empty aircraft plus crew, ballast if necessary and the amount of fuel and oil necessary for the test.

(b) The horizontal distance required for acceleration from a standing start to the speed of best angle of climb with light load and at the maximum authorized gross weight.

(c) The best angle of climb with light load and at the maximum authorized gross weight and with the engines operating at authorized take-off power.

(2) Climb performance, obtained with one engine stopped and the remaining engine or engines operating at the authorized take-off power.

(a) The speed of best angle of climb with one engine shut off with light load and at gross weight.

- (b) The best angle of climb with conditions as in 2(a).
- (3) Performance in the air with all engines functioning normally.
 - (a) The service ceiling, which is defined as the altitude at which the best rate of climb is 100 feet per minute, with light load and starting from the ground at gross weight. These tests need not be conducted above 14,000 feet standard altitude unless the aircraft is specially equipped for operation above that altitude.
- (4) Performance in the air with one engine dead and the remaining engine or engines operating at the authorized maximum (except take-off) power. The engines shall be so installed as to cool and otherwise function satisfactorily in this condition.
 - (a) The usable ceiling which, for this purpose, shall be defined as the altitude at which the best rate of climb is 50 feet per minute, which light load and at gross weight.
 - (b) The speed in level flight, at the usable ceiling, at gross weight.
- (5) Approach and landing performance.
 - (a) The steepest gliding angle practicable for landing approach at gross weight. Wing flaps or other similar devices may be used for this test. The engines shall be fully throttled.
 - (b) The length of ground run required to come to a full stop after landing from condition (5)(a) above. Brakes may be used.

Section 9. Proving Tests.

- (A) All air line aircraft shall have at least 100 hours of proving tests in the hands of an air line operator, under the supervision of an authorized representative of the Department of Commerce before authority for carrying passengers may be issued. At least 50 hours of such tests shall be on scheduled operation and include at least 10 hours of night operation.
- (B) In the case of major changes on aircraft previously proved, 50 hours of proving test similar to that outlined in the preceding paragraph may be required, at least one-half of this time to be in scheduled operation.
- (C) During the tests specified in (A) and (B) above, passengers other than those essential to the tests are prohibited. Mail, express and/or cargo may be carried.