Federal Aviation Agency

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Civil Aeronautics Manual 40

Scheduled Interstate Air Carrier Certification and Operation Rules

Supplement No. 3, CAM 40 dated Sept. 15, 1959 — March 3, 1961

Subject: *Revision to CAM 40.*

This supplement is issued to incorporate in CAM 40 Civil Air Regulations Amendments 40–21 and 40–28.

Amendment 40–21, concerning air carrier training programs and the qualification of and proficiency checks for pilots other than pilots in command, is now contained in CAM 40 as appendix C as it did not become effective until January 1, 1961. Now that it is effective, the changes have been incorporated in the text and appendix C is being deleted.

Amendment 40–28 concerns oxygen mask requirements and altitude training for flight crewmembers assigned to duty on turbine-powered airplanes operated above 25,000 feet. It was issued on January 19, 1961, to become effective on March 3, 1961.

New or revised material is enclosed in black brackets on the pages submitted with this supplement except the pages in the addendum containing the preambles of amendments.

Remove the following pages:	*Insert the following new pages:*
VII through X	VII through X
5 and 6	5 and 6
51 and 52	51 through 52–1
56–1 through 60–1	57 through 60–2
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identified by: (1) A continental or insular geographic location, or (2) a point at which a definite radio fix can be established.

Runway. A runway is a clearly defined area of an airport suitable for the safe landing or take-off of airplanes.

Scheduled for duty aloft. Scheduled for duty aloft means the assignment of a flight crew member on the basis of the flight time established in the operations schedules rather than the actual flight time.

[*Second in command.* Second in command means a pilot other than the pilot in command who is designated by the air carrier to act as second in command of an airplane.

[(Amendment 40–21, published in 24 F.R. 9765, Dec. 5, 1959, effective Jan. 1, 1961.)]

Show. Show means to demonstrate or prove to the satisfaction of the Administrator prior to the issuance of the air carrier operating certificate and at any time thereafter required by the Administrator.

Synthetic trainer. A synthetic trainer is a device the use of which is approved to simulate certain operating conditions.

Take-off safety speed, V_2. The take-off safety speed is the airplane speed used in the determination of the take-off flight path at which the climb-out following take-off can be safely executed with one engine inoperative and with the airplane in the take-off configuration. (See the pertinent airworthiness requirements for the manner in which such speed is determined.)

Time in service. Time in service, as used in computing maintenance time records, is the time from the moment an airplane leaves the ground until it touches the ground at the end of a flight.

Transport category airplane. A transport category airplane is an airplane which has been type certificated in accordance with the requirements of Part 4b of this subchapter or the transport category requirements of Part 4a of this subchapter.

Type. With regard to airman qualifications, type means all airplanes of the same basic design, including all modifications thereto except those modifications which the Administrator has found result in a substantial change in characteristics pertinent to the airman concerned.

VFR. VFR is the symbol used to designate visual flight rules.

V_{s_o}. V_{s_o} is the symbol used to designate the true indicated stalling speed or the minimum steady flight speed in the landing configuration.

Visibility. Visibility is the greatest distance at which conspicuous objects can be seen and identified.

(1) *Flight visibility.* Flight visibility is the average range of visibility forward from the cockpit of an airplane in flight to see and identify prominent unlighted objects by day and prominent lighted objects by night.

(2) *Ground visibility.* Ground visibility is the visibility at the earth's surface as reported by the United States Weather Bureau or by a source approved by the Weather Bureau.

Week. A week is that period of time extending from the first day of any week as delineated by the calendar through the last day thereof.

Year. A year is that period of time extending from the first day of any year as delineated by the calendar through the last day thereof.

Certification Rules and Operations Specifications Requirements

40.10 *Certificate required.* No person subject to the provisions of this part shall operate an airplane in scheduled interstate air transportation without, or in violation of the terms of, an air carrier operating certificate issued by the Administrator.

40.11 *Contents of certificate.* An air carrier operating certificate shall specify the points to and from which, and the routes over which, an air carrier is authorized to operate.

40.12 *Application for certificate.* An application for an air carrier operating certificate shall be made in the form and manner and contain information prescribed by the Administrator.

40.12–1 *Application for air carrier operating certificate (FAA rules which apply to sec. 40.12.)*

(a) *General.*

(1) The holder of a certificate of convenience and necessity shall apply to the appro-

priate Regional Administrator or an air carrier operating certificate at least 30 days prior to the date proposed for beginning scheduled interstate air transportation within the continental limits of the United States. The application shall be prepared in loose-leaf form, on white paper of approximately 8″ x 10½″ in size, and using one side of the sheet only. The application shall be executed by a duly authorized officer or employee of the applicant having knowledge of the matters set forth therein, and shall have attached thereto two copies of the appropriate written authority issued to such officer or employee by the applicant.

(2) Two copies of the application, and of subsequent amendments thereto, shall be filed with the Regional Administrator having jurisdiction over the area in which the principal office of the air carrier is located. When any facility or service directly affecting the operation of the air carrier concerned is furnished by other than the applicant or the Federal Government, at least two copies of the contract or working agreement concerning such facilities or service shall be submitted with the application. In this connection, if formal contracts covering such facilities or service have not been completed, letters showing agreement between the contracting parties will be accepted until copies of the formal contract are obtainable.

(b) *Format of application.* The application shall be in the form of a letter and shall contain the information outlined below:

TO: Regional Administrator,
Federal Aviation Agency

In accordance with section 604 of the Federal Aviation Act of 1958, as amended, and the Civil Air Regulations, application is hereby made for an Air Carrier Operating Certificate.

Give exact name and full post office address of applicant.

Give the name, title, and post office address of the official or employee to whom correspondence in regard to the application is to be addressed.

SECTION I. *Operations.*

A. State whether the type of service proposed is for the carriage of passengers, goods, or mail, or a particular combination thereof. If the type of service is not the same for each route or portion thereof, specify the type of service for each route or portion of a route.

B. State whether the type of operation proposed is day or night, visual flight rules, instrument or over-the-top, or a particular combination thereof. If the type of operation is not the same for each route or route segment, specify the type of operation for each route or route segment.

SECTION II. *Schedule.*

A. Submit a proposed schedule plan (or plans if seasonal changes or differences in equipment are involved) indicating the following:

1. Block to block time and mileage between scheduled stops.

2. Ground time at each intermediate and terminal stop.

B. Specify the basis upon which the proposed schedule has been computed, indicating the following:

1. Cruising speed and altitude.

2. Percentage of horsepower.

3. Direction and velocity of prevailing winds.

SECTION III. *Route.*

A. Submit a map suitable for aerial navigation on which are shown the exact geographical track of the proposed routes, and information with respect to terminal and intermediate stops, available landing areas, and radio navigational facilities. This material will be indicated in a manner that will facilitate identification. The applicant may use any method that will clearly distinguish the information, such as different colors, different types of lines, etc. For example, if different colors are used, the identification will be accomplished as follows:

1. Airway routes: Black.

2. Direct routes: Green.

3. Terminal and regular intermediate stops: Orange circle.

4. Alternate landing fields or areas: Purple circle.

5. Other available landing fields or areas: Yellow circle.

6. Indicate the location and normal operating range of all radio navigational facilities to be used in connection with the proposed operation.

B. *Airports.* Furnish the following information with regard to each regular, alternate, refueling, and provisional airport to be used in the conduct of the proposed operation:

1. Name of airport.

supplies mentioned above should be provided in accordance with the requirements of section 40.203(a) except that the total supply for these other crew members need not exceed that provided on the basis of section 40.202(b) for cabin pressure altitudes in excess of 10,000 feet plus an additional supply necessary to satisfy the increased oxygen flow which might be needed following a pressurization failure; this supplement to the section 40.202(b) supply should be based on the duration of flight at the altitudes which would permit safe flight with respect to terrain clearance.

(3) During normal operation at cabin pressure altitudes above 10,000 feet oxygen should be used by each member of the flight crew on flight deck duty for the duration of the flight in excess of 30 minutes at the cabin pressure altitudes between 10,000 and 12,000 feet and for the duration of the flight at cabin pressure altitudes in excess of 12,000 feet. In the event of the loss of cabin pressurization, oxygen should continue to be used by the flight crew members on flight deck duty for the duration of flight at cabin pressure altitudes greater than 10,000 feet. All other crew members may use oxygen according to their individual needs.

(Published in 19 F.R. 1237, March 5, 1954, effective April 1, 1954.)

40.203–2 *Computation of supply for passengers in pressurized cabin aircraft (FAA policies which apply to sec. 40.203(b)).*

(a) *Cabin altitudes less than 10,000 feet.* When a pressurized cabin aircraft is certificated to fly with a cabin pressure altitude no greater than 10,000 feet, only the supply of oxygen stipulated by section 40.202(c) need be provided for passengers. In determining this supply the following policies should be considered:

(1) The altitude which should be used in computing the supply of oxygen required by this section should be the altitude to which the aircraft would descend following a cabin pressurization failure, considering terrain clearance and operating limitations.

(2) Relative to sections 40.203(b) (1) and (2), no oxygen need be provided for the first 4 minutes following a cabin pressurization failure.

(b) *Cabin altitudes greater than 10,000 feet.* When a pressurized cabin aircraft is certificated to fly with a cabin pressure altitude greater than 10,000 feet, the following policies should be considered: When the cabin pressure altitude is above 10,000 feet to and including 14,000 feet, sufficient oxygen shall be provided for 10 percent of the number of passengers for the duration of flight between such cabin pressure altitudes. When the cabin pressure altitude is above 14,000 feet to and including 15,000 feet, sufficient oxygen shall be provided for 30 percent of the number of passengers for the duration of flight between such cabin pressure altitudes. When the cabin pressure altitude is above 15,000 feet, sufficient oxygen shall be provided for each passenger for the duration of flight above such a cabin pressure altitude. In addition to the above supply of oxygen, in order to provide for loss of cabin pressure, the supplementary oxygen required by whatever portions of section 40.203(b) are applicable, shall be provided except that in no case will it be necessary to furnish a supply of oxygen in excess of that necessary to supply oxygen to 100 percent of the passengers for the maximum possible duration of flight at the maximum cabin altitude which could be attained under either of the normal operating or emergency conditions whichever is greater.

(Published in 19 F.R. 1238, March 5, 1954, effective April 1, 1954.)

40.203–3 *Oxygen requirements for clinical purposes (FAA policies which apply to sec. 40.203(b)).* The regulations do not require that oxygen be provided for clinical purposes; hence, if the air carrier believes that such oxygen is to be desired, he should provide oxygen for this purpose. It is suggested that portable units of any size the air carrier desires be used for this purpose in order that the minimum supply required for supplementary breathing purposes will be preserved. If, however, the operator wishes to use a common source of supply for the oxygen required by the regulations and for clinical purposes, he may do so if he provides an amount of oxygen sufficiently greater than that required by the regulations.

It is suggested that a quantity of 300 liters may be considered as satisfying reasonable needs.

(Published in 19 F.R. 1238, March 5, 1954, effective April 1, 1954.)

40.203–4 *Oxygen requirements for infants-in-arms (FAA policies which apply to sec. 40.203(b)).* Provisions should be made for administering oxygen to infants-in-arms and additional oxygen over that required by section 40.203(b) should be carried whenever an unusually large number of infants is carried. This additional oxygen is needed only when there is a passenger or infant for each seat position and the number of infants not provided for exceeds 50 percent of the seat positions. Acceptable methods of administering the oxygen to infants and now used by many operators are: (a) A disposal plastic mask which can be fitted to the face: (b) an infant size BLB oro-nasal mask; and (c) semirigid paper cups, specifically reserved for the purpose, which can be fitted over the infant's nose and mouth, with a hole punched through the bottom through which an oxygen tube or Y-connector can be inserted. Any other acceptable method may also be used.

(Published in 19 F.R. 1238, March 5, 1954, effective April 1, 1954.)

40.203–T *Supplemental oxygen for emergency descent and for first aid; turbine-powered airplanes with pressurized cabins.*

(a) *General.* Prior to November 30, 1959, turbine-powered airplanes with pressurized cabins shall comply with the provisions of section 40.203, with the additional requirement that, when operating at flight altitudes above 25,000 feet, all flight crew members on flight deck duty shall be provided with oxygen masks, connected to appropriate supply terminals, which shall be immediately available for use; or alternatively, with the provisions of this section except that effective November 30, 1959, all such turbine powered airplanes shall comply with the provisions of this section. When operating pressurized cabin airplanes, the air carrier shall furnish oxygen and dispensing equipment necessary to permit compliance with the requirements set forth in this section in the event of cabin pressurization failure.

(b) *Crew members.* When operating at flight altitudes above 10,000 feet, oxygen shall be provided to permit compliance with section 40.202–T except that not less than a 2-hour supply shall be provided for the flight crew members on flight deck duty. The oxygen required by section 40.205 may be included in determining the supply required for flight crew members on flight deck duty in the event of cabin pressurization failure.

(c) *Use of oxygen masks by flight crew members.*

[(1) When operating above flight level 250, each flight crewmember on flight deck duty shall be provided with an oxygen mask so designed that it is capable of being rapidly placed on the face from its ready position, properly secured, sealed, and supplying oxygen upon demand; and so designed that upon completion of the donning action the oxygen mask does not prevent the flight crewmember from being able immediately to communicate with other crewmembers over the airplane intercommunication system. When not being used above flight level 250, the oxygen mask shall be kept at all times in a condition for ready use and so located as to be within the immediate reach at all times of the flight crewmember while at his duty station.

[(2) When operating above flight level 250, one pilot at the controls of the airplane shall at all times wear and use an oxygen mask secured, sealed, and supplying oxygen: *Provided,* That the one pilot need not wear and use an oxygen mask while at or below flight level 350 if each flight crewmember on flight deck duty is provided with a quick-donning type of oxygen mask which the air carrier has demonstrated to the satisfaction of a representative of the Administrator is capable of being placed on the face from its ready position, properly secured, sealed, and supplying oxygen upon demand, with one hand and within 5 seconds. The air carrier shall also demonstrate that the donning of the mask can be accomplished without disturbing eye glasses and without delaying the flight crewmember from proceeding with his assigned emergency duties. Upon comple-

tion of the donning action, the oxygen mask shall not prevent the flight crewmember from being able immediately to communicate with other crewmembers over the airplane intercommunication system.

[(3) Notwithstanding the provisions in subparagraph (2) of this paragraph, when operating above flight level 250, if at any time it is necessary for one pilot to leave his station at the controls of the airplane for any reason, the remaining pilot at the controls shall don and use his oxygen mask until the other pilot has returned to his duty station.

[(4) Prior to takeoff of a flight, each flight crewmember shall personally preflight his oxygen equipment to insure that the oxygen mask is functioning, fitted properly, connected to appropriate supply terminals, and that the oxygen supply and pressure is adequate for use.]

(Amendment 40-23, published in 24 F.R. 9839, Dec. 8, 1959, effective Nov. 30, 1959; Amendment 40-25, published in 25 F.R. 797, Jan. 30, 1960, effective Feb. 1, 1960; [Amendment 40-28, published in 26 F.R. 1055, Feb. 3, 1961, effective Mar. 3, 1961.)]

(d) *Use of portable oxygen equipment by cabin attendants.* Portable oxygen equipment of not less than a 15-minute oxygen supply shall be carried by each attendant during the entire time flight is conducted above 25,000 feet flight altitude, unless it is shown that sufficient portable oxygen units equipped with masks or spare outlets and masks are distributed throughout the cabin to insure immediate availability of oxygen to the cabin attendants regardless of their location at the time of cabin depressurization.

(e) *Passenger cabin occupants.* When operating at flight altitudes above 10,000 feet, the following supply of oxygen shall be provided for the use of passenger cabin occupants:

(1) When an airplane is certificated to operate at flight altitudes to and including

40.241 *Maintenance and inspection requirements.*

(a) The air carrier, or the person with whom arrangements have been made for the performance of maintenance and inspection functions, shall establish an adequate inspection organization responsible for determining that workmanship, methods employed, and material used are in conformity with the requirements of the regulations of this subchapter, with accepted standards and good practices, and that any airframe, engine, propeller, or appliance released for flight is airworthy.

(b) Any individual who is directly in charge of inspection, maintenance, overhaul, or repair of any airframe, engine, propeller, or appliance shall hold an appropriate license or airman certificate.

40.241–1 *Persons directly in charge of inspection, maintenance, overhaul, or repair of airframes, engines, propellers, or appliances (FAA interpretations which apply to sec. 40.241(b)).* The individual "directly in charge" is interpreted to mean each individual assigned by the carrier or other person performing maintenance, to a position in which he is responsible for the work of a shop or station which performs inspections, maintenance, repairs, alterations, or other functions affecting aircraft airworthiness. Such individuals need not necessarily physically observe and direct each worker constantly, but must be available for consultation and decision on matters requiring instruction or decision from higher authority than that of the individuals performing the work.

(Published in 18 F.R. 8612, December 22, 1953, effective January 1, 1954.)

40.242 *Maintenance and inspection training program.* The air carrier, or the person with whom arrangements have been made for the performance of maintenance and inspection functions, shall establish and maintain a training program to insure that all maintenance and inspection personnel charged with determining the adequacy of work performed are fully informed with respect to all procedures and techniques and with new equipment introduced into service, and are competent to perform their duties.

40.243 *Maintenance and inspection personnel duty time limitations.* All maintenance and inspection personnel shall be relieved of all duty for a period of at least 24 consecutive hours during any 7 consecutive days or equivalent thereof within any one month.

Airman and Crew Member Requirements

40.260 *Utilization of airman.*

(a) No air carrier shall utilize an individual as an airman unless he holds a valid appropriate airman certificate issued by the Administrator and is otherwise qualified for the particular operation in which he is to be utilized.

(b) No individual who has reached his 60th birthday shall be utilized or serve as a pilot on any aircraft while engaged in air carrier operations.

(Amendment 40–22, published in 24 F.R. 9767, Dec. 5, 1959, effective March 15, 1960.)

40.261 *Composition of flight crew.*

(a) No air carrier shall operate an airplane with less than the minimum flight crew specified in the airworthiness certificate for the type of airplane and required in this part for the type of operation.

(b) Where the provisions of this part require the performance of two or more functions for which an airman certificate is necessary, such requirement shall not be satisfied by the performance of multiple functions at the same time by any airman.

[(c) Where the air carrier is authorized to operate under instrument conditions or operate airplanes of more than 12,500 pounds maximum certificated weight, the minimum pilot crew shall consist of two pilots, one of whom shall be designated as pilot in command and the other as second in command.

[(Amendment 40–21, published in 24 F.R. 9765, Dec. 5, 1959, effective Jan. 1, 1961.)]

(d) On flights requiring a flight engineer, at least one other flight crew member shall be sufficiently qualified, so that in the event of illness or other incapacity, emergency cov-

erage can be provided for that function for the safe completion of the flight. A pilot need not hold a flight engineer certificate to function in the capacity of a flight engineer for such emergency coverage.

40.263 *Flight engineer.* An airman holding a valid flight engineer certificate shall be required on all airplanes certificated for more than 80,000 pounds maximum certificated take-off weight. Such airman shall also be required on all four-engine airplanes certificated for more than 30,000 pounds maximum certificated take-off weight where the Administrator finds that the design of the airplane used or the type of operation is such as to require engineer personnel for the safe operation of the airplane.

40.265 *Flight attendant.* At least one flight attendant shall be provided by the air carrier on all flights carrying passengers in airplanes of 10-passenger capacity or more.

40.266 *Aircraft dispatcher.* Each air carrier shall provide an adequate number of qualified dispatchers at each dispatch center to insure the proper operational control of each flight.

40.267 *Assignment of emergency evacuation functions for each crew member.* After May 31, 1956, each air carrier shall assign all necessary emergency functions for each crew member to perform in the event of circumstances requiring emergency evacuation. The air carrier shall show that functions so assigned are practicable of accomplishment. These functions shall be described in the air carrier manual.

Training Program

40.280 *Training requirements.*

(a) Each air carrier shall establish a training program sufficient to insure that each crew member and dispatcher used by the air carrier is adequately trained to perform the duties to which he is to be assigned. The initial training phases shall be satisfactorily completed prior to serving in scheduled operations.

(b) Each air carrier shall be responsible for providing adequate ground and flight training facilities and properly qualified instructors. There also shall be provided a sufficient number of check airmen to conduct the flight checks required by this part. Such check airmen shall hold the same airman certificates and ratings as are required for the airman being checked.

(c) The training program for each flight crew member shall consist of appropriate ground and flight training including proper flight crew coordination. Procedures for each flight crew function shall be standardized to the extent that each flight crew member will know the functions for which he is responsible and the relation of those functions to those of other flight crew members. The initial program shall include at least the appropriate requirements specified in sections 40.281 through 40.286.

(d) The crew member emergency procedures training program shall include at least the requirements specified in section 40.286.

(e) The appropriate instructor, supervisor, or check airman responsible for the particular training or flight check shall certify to the proficiency of each crew member and dispatcher upon completion of his training, and such certification shall become a part of the individual's record.

40.281 *Initial pilot ground training.* Ground training for all pilots shall include instruction in at least the following:

(a) The appropriate provisions of the air carrier operations specifications and appropriate provisions of the regulations of this subchapter with particular emphasis on the operation and dispatching rules and airplane operating limitations;

(b) Dispatch procedures and appropriate contents of the manuals;

(c) The duties and responsibilities of crew members;

(d) The type of airplane to be flown, including a study of the airplane, engines, all major components and systems, performance limitations, standard and emergency operating procedures, and appropriate contents of the approved Airplane Flight Manual;

(e) The principles and methods of determining weight and balance limitations for take-off and landing;

(f) Navigation and use of appropriate aids to navigation, including the instrument approach facilities and procedures which the air carrier is authorized to use;

(g) Airport and airways traffic control systems and procedures, and ground control letdown procedures if pertinent to the operation;

(h) Meteorology sufficient to insure a practical knowledge of the principles of icing, fog, thunderstorms, and frontal systems; and

(i) Procedures for operation in turbulent air and during periods of ice, hail, thunderstorms, and other potentially hazardous meteorological conditions.

40.282 *Initial pilot flight training.*

(a) Flight training for each pilot shall include at least take-offs and landings, during day and night, and normal and emergency flight maneuvers in each type of airplane to be flown by him in scheduled operations, and *flight under simulated instrument flight* conditions. [A pilot qualifying to serve as other than pilot in command or as second in command shall demonstrate to a representative of the Administrator or to a check pilot his ability to take off and land each type of airplane in which he is to serve.]

[(Amendment 40–21, published in 24 F.R. 9765, Dec. 5, 1959, effective Jan. 1, 1961.)]

(b) Flight training for a pilot qualifying to serve as pilot in command shall include flight instruction and practice in at least the following maneuvers and procedures:

(1) In each type of airplane to be flown by him in scheduled operations:

(i) At the authorized maximum take-off weight, take-off using maximum take-off power with simulated failure of the critical engine. For transport category airplanes the simulated engine failure shall be accomplished as closely as possible to the critical engine failure speed (V_1), and climb-out shall be accomplished at a speed as close as possible to the take-off safety speed (V_2). Each pilot shall ascertain the proper values for speeds V_1 and V_2;

(ii) At the authorized maximum landing weight, flight in a four-engine airplane, where appropriate, with the most critical combinations of two engines inoperative, or operating at zero thrust, utilizing appropriate climb speeds as set forth in the Airplane Flight Manual;

(iii) At the authorized maximum landing weight, simulated pull-out from the landing and approach configurations accomplished at a safe altitude with the critical engine inoperative or operating at zero thrust;

(iv) Suitable combinations of airplane weight and power less than those specified in subdivisions (i), (ii), and (iii) of this subparagraph may be employed if the performance capabilities of the airplane under the above conditions are simulated.

(2) Conduct of flight under simulated instrument conditions, utilizing all types of navigational facilities and the letdown procedures used in normal operations. If a particular type of facility is not available in the training area, such training may be accomplished in a synthetic trainer.

[(c) Flight training for a pilot qualifying to serve as second in command shall include flight instruction and practice in at least the following maneuvers and procedures:

[(1) In each type of airplane to be flown by him in scheduled operation:

[(i) Assigned flight duties as second in command, including flight emergencies,

[(ii) Taxiing,

[(iii) Takeoffs and landings,

[(iv) Climbs and climbing turns,

[(v) Slow flight,

[(vi) Approach to stall,

[(vii) Engine shutdown and restart,

[(viii) Takeoff and landing with simulated engine failure,

[(ix) Conduct of flight under simulated instrument conditions, including instrument approach at least down to circling approach minimum and missed-approach procedures.

[(2) Conduct of flight under simulated instrument conditions, utilizing all types of navigation facilities and the letdown procedures used in normal operations. Except for those approach procedures for which the

lowest minimums are approved, all other letdown procedures may be given in a synthetic trainer which contains the radio equipment and instruments necessary to simulate other navigational and letdown procedures approved for use by the air carrier.

[(Amendment 40-21, published in 24 F.R. 9765, Dec. 5, 1959, effective Jan. 1, 1961.)]

40.284 *Initial flight engineer training.*

(a) The training for flight engineers shall include at least the instruction specified in section 40.281 (a) through (e).

(b) Flight engineers shall be given sufficient training in flight to become proficient in those duties assigned them by the air carrier. Except for emergency procedures, this training may be accomplished during scheduled flight under the supervision of a qualified flight engineer.

40.286 *Initial crew member emergency training.*

(a) The training in emergency procedures shall be designed to give each crew member appropriate individual instruction in all emergency procedures, including assignments in the event of an emergency, and proper coordination between crew members. At least the following subjects as appropriate to the individual crew member shall be taught: The procedures to be followed in the event of the failure of an engine, or engines, or other airplane components or systems, emergency decompression, fire in the air or on the ground, ditching, evacuation, the location and operation of all emergency equipment, and power setting for maximum endurance and maximum range.

(b) Synthetic trainers may be used for training of crew members in emergency procedures where the trainers sufficiently simulate flight operating emergency conditions for the equipment to be used.

[(c) All crewmembers performing duties on pressurized airplanes operated above flight level 250, shall, as a part of their approved emergency procedure training, receive instructions by means of lectures and films covering at least: respiration, hypoxia, duration of consciousness at altitude when supplemental oxygen is not supplied, gas expansion, gas bubble formation, physical phenomena and incidents of decompression; and receive actual training and practice in the donning of the oxygen mask and operation of the oxygen equipment. In lieu of the required films, the air carrier may use any other equivalent means of visual presentation which, after demonstration, meets with the approval of a representative of the Administrator.

[(Amendment 40-28, published in 26 F.R. 1055, Feb. 3, 1961, effective March 3, 1961.)]

40.286-1 *Initial crew member emergency training—synthetic trainers* (FAA *interpretations which apply to sec. 40.286(b)*). Synthetic trainers will be deemed to sufficiently simulate flight operating emergency conditions if the trainer is so designed as to accurately reproduce the placement of flight station instruments and controls of the particular type and model of aircraft for which the training is given, and the operation of such trainer permits accurate reproduction of the instrument and control characteristics found in the emergency conditions simulated.

(Published in 18 F.R. 6619, October 17, 1953, effective January 1, 1954.)

40.288 *Initial aircraft dispatcher training.*

(a) The training program for aircraft dispatchers shall provide for training in their duties and responsibilities and shall include a study of the flight operation procedures, air traffic control procedures, the performance of the airplanes used by the air carrier, navigational aids and facilities, and meteorology. Particular emphasis shall be placed upon the procedures to be followed in the event of emergencies, including the alerting of proper Governmental, company, and private agencies to render maximum assistance to an airplane in distress.

(b) Each aircraft dispatcher shall, prior to initially performing the duty of an aircraft dispatcher, satisfactorily demonstrate to the supervisor or ground instructor authorized to certify to his proficiency, his knowledge of the following subjects:

(1) Contents of the air carrier operating certificate;

(2) Appropriate provisions of the air carrier operations specifications, manual, and regulations of this subchapter;

(3) Characteristics of the airplanes operated by the air carrier;

(4) Cruise control data and cruising speeds for such airplanes;

(5) Maximum authorized loads for the airplanes for the routes and airports to be used;

(6) Air carrier radio facilities;

(7) Characteristics and limitations of each type of radio and navigational facility to be used;

(8) Effect of weather conditions on airplane radio reception;

(9) Airports to be used and the general terrain over which the airplanes are to be flown;

(10) Prevailing weather phenomena;

(11) Sources of weather information available;

(12) Pertinent air traffic control procedures; and

(13) Emergency procedures.

40.289 *Recurrent training.*

(a) Each air carrier shall provide such training as is necessary to insure the continued competence of each crew member and dispatcher and to insure that each possesses adequate knowledge of and familiarity with all new equipment and procedures to be used by him.

(b) Each air carrier shall, at intervals established as part of the training program, but not to exceed 12 months, check the competence of each crew member and dispatcher with respect to procedures, techniques, and information essential to the satisfactory performance of his duties. [Where the check of the pilot in command or second in command requires actual flight, such check shall be considered to have been met by the checks accomplished in accordance with sections 40.302 and 40.305, respectively.]

[(Amendment 40–21, published in 24 F.R. 9765, Dec. 5, 1959, effective Jan. 1, 1961.)]

(c) The appropriate instructor, supervisor, or check airman shall certify as to the proficiency demonstrated, and such certification shall become a part of the individual's record.

[40.290 *Approval of training program.* The training program established under the provisions of sections 40.280 through 40.289 by the air carrier shall meet with the approval of an authorized representative of the Administrator: *Provided,* That the curriculum of such training program shall be submitted in appropriate form to an authorized representative of the Administrator not later than May 1, 1960.

[(Amendment 40–21, published in 24 F.R. 9765, Dec. 5, 1959, effective Jan. 1, 1961, except as noted.)]

Flight Crew Member and Dispatcher Qualification

40.300 *Qualification requirements.*

(a) No air carrier shall utilize any flight crew member or dispatcher, nor shall any such airman perform the duties authorized by his airman certificate, unless he satisfactorily meets the appropriate requirements of section 40.280 or section 40.289, and sections 40.301 through 40.310. All pilots serving as pilot in command shall hold appropriate airline transport pilot certificates and ratings. All other pilots shall hold at least commercial pilot certificates and instrument ratings.

[(b) Check airmen shall certify as to the proficiency of all pilots being examined, as required by sections 40.302, 40.303, and 40.305, and such certification shall become a part of the airman's record.

[(Amendment 40–21, published in 24 F.R. 9765, Dec. 5, 1959, effective Jan. 1, 1961.)]

[40.301 *Pilot recent experience.* No air carrier shall schedule a pilot in command or second in command to serve as such in scheduled air transportation unless within the preceding 90 days he has made at least 3 takeoffs and 3 landings in the airplane of the particular type on which he is to serve.

[(Amendment 40–21, published in 24 F.R. 9765, Dec. 5, 1959, effective Jan. 1, 1961.)]

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40.302. *Pilot checks.*

(a) *Line check.* Prior to serving as pilot in command, and at least once each 12 months thereafter, a pilot shall satisfactorily accomplish a line check in one of the types of airplanes normally to be flown by him. The line check may be given at any time during the month preceding or following the month in which it becomes due. The effective date of the check, if given within the preceding or following month, shall be the same as if given within the month in which it became due. This check shall be given by a check pilot who is qualified for the route. It shall consist of at least a scheduled flight between terminals over a route to which the pilot is normally assigned during which the check pilot shall determine whether the individual being checked satisfactorily exercises the duties and responsibilities of pilot in command.

(Amendment 40-26, published in 25 F.R. 3850, May 4, 1960, effective June 1, 1960.)

(b) *Proficiency check.*

(1) An air carrier shall not utilize a pilot as pilot in command until he has satisfactorily demonstrated to a check pilot or a representative of the Administrator his ability to pilot and navigate airplanes to be flown by him. Thereafter, he shall not serve as pilot in command unless each 6 months he successfully completes a similar pilot pro-

pilot in command, within the preceding 12-month period, shall have made at least one trip as pilot or other member of the flight crew between terminals into which he is scheduled to fly and shall have complied with the provisions of section 40.303(e), if applicable.

(b) In order to reestablish pilot route and airport qualifications after absence from a route for a period in excess of 12 months, a pilot shall comply with the appropriate provisions of section 40.303.

[40.305 *Proficiency check; second in command.*

[(a) An air carrier shall not utilize a pilot as second in command until he has satisfactorily demonstrated to a check pilot or a representative of the Administrator his ability to pilot and navigate airplanes to be flown by him and to perform his assigned duties. Thereafter, he shall not serve as second in command unless each 12 months he successfully completes a similar pilot proficiency check. The proficiency check may be given at any time during the month preceding or following the month in which it becomes due. The effective date of the check, if given within the preceding or following month, shall be the same as if given within the month in which it became due. Where such pilots serve in more than one airplane type, at least every other successive proficiency check shall be given in flight in the larger airplane type. The pilot proficiency check shall include at least an oral or written equipment examination, and the procedures and flight maneuvers specified in section 40.282(c)(1). The pilot proficiency check may be demonstrated from either the right or left pilot seat.

[(b) Subsequent to the initial pilot proficiency check for the second in command, an approved course of training in an airplane simulator which meets the requirements of section 40.302(b)(3), if satisfactorily completed, may be substituted at alternate 12-month intervals for the proficiency check required by paragraph (a) of this section.

[(c) Satisfactory completion of the proficiency check in accordance with the requirements of section 40.302(b) will also meet the requirements of this section.

[(Amendment 40–21, published in 24 F.R. 9765, Dec. 5, 1959, effective Jan. 1, 1961.)]

40.307 *Flight engineer qualification for duty.* A flight engineer shall not be assigned to nor perform duties for which he is required to be certificated as a flight engineer unless, within the preceding 6-month period, he has had at least 50 hours of experience as a flight engineer on the type airplane on which he is to serve, or until the air carrier or an authorized representative of the Administrator has checked such flight engineer and determined that he is familiar with all essential current information and operating procedures relating to the type of airplane to which he is to be assigned and is competent with respect to such airplane. This check shall include a check in flight: *Provided,* That in the case of a flight engineer who has been previously qualified in the type airplane, the check may be accomplished in a synthetic trainer in lieu of a check in flight.

40.307–1 *Flight engineer qualifications for duty (FAA interpretations which apply to sec. 40.307).* An airman assigned to flight-check other flight engineers must meet the recent experience requirements of this part before serving as a flight engineer in air transportation. However, the time spent in giving flight engineer checks may be applied toward the 50-hour recent experience requirements on a particular type of aircraft. Unless such experience has been obtained within the preceding 6-month period, a check by the air carrier or an authorized representative of the Administrator is required.

(Published in 21 F.R. 678, January 31, 1956, effective February 15, 1956.

40.310 *Aircraft dispatcher qualification for duty.*

(a) Prior to dispatching airplanes over any route or route segment, an aircraft dispatcher shall be familiar, and the air carrier shall determine that he is familiar, with all essential operating procedures for the entire route and with the airplanes to be used: *Provided,* That where he is qualified only on

a portion of such route, he may dispatch airplanes, but only after coordinating with dispatchers who are qualified for the other portions of the route between the points to be served.

(b) An aircraft dispatcher shall not dispatch airplanes in the area over which he is authorized to exercise dispatch jurisdiction unless within the preceding 12 months he has made at least one round trip over the particular area on the flight deck of an airplane. The trip selected for qualification purposes shall be one which includes entry into as many points as practicable, but it shall not be necessary for the aircraft dispatcher to make a flight over each route in the area.

Flight Time Limitations

40.320 *Flight time limitations.*

(a) An air carrier shall not schedule any flight crew member for duty aloft in scheduled air transportation or in other commercial flying if his total flight time in all commercial flying will exceed the following flight time limitations:

(1) 1,000 hours in any year.

(2) 100 hours in any month,

(3) 30 hours in any seven consecutive days.

(b) An air carrier shall not schedule any flight crew member for duty aloft for more than 8 hours during any 24 consecutive hours, unless he is given an intervening rest period at or before the termination of 8 scheduled hours of duty aloft. Such rest period shall equal twice the number of hours of duty aloft since the last preceding rest period, and in no case shall the rest period be less than 8 hours.

(c) When a flight crew member has been on duty aloft in excess of 8 hours in any 24 consecutive hours he shall, upon completion of his assigned flight or series of flights, be given at least 16 hours for rest before being assigned any further duty with the air carrier.

(d) Time involved in transportation, not local in character, required of a flight crew member by an air carrier and provided by the air carrier for the purpose of transporting the flight crew member to an airport at which he is required to serve on a flight as a crew member, or from the airport at which he was relieved from duty as a crew member to return to his home station, shall not be considered as part of any required rest period.

(e) Each flight crew member engaged in scheduled air transportation shall be relieved from all duty with the air carrier for at least 24 consecutive hours during any seven consecutive days.

(f) No flight crew member shall be assigned any duty with an air carrier during any rest period prescribed by this part.

(g) A flight crew member shall not be considered to be scheduled for duty in excess of prescribed limitations, if the flights to which he is assigned are scheduled and normally terminate within such limitations, but due to exigencies beyond the air carrier's control, such as adverse weather conditions, are not at the time of departure expected to reach their destination within the scheduled time.

Duty Time Limitations; Aircraft Dispatcher

40.340 *Aircraft dispatcher daily duty time limitations.*

(a) The daily duty period for an aircraft dispatcher shall commence at such time as will permit him to become thoroughly familiar with existing and anticipated weather conditions along the route prior to the dispatch of any airplane. He shall remain on duty until all airplanes dispatched by him have completed their flights, or have proceeded beyond his jurisdiction, or until he is relieved by another qualified aircraft dispatcher.

(b) The following rules will govern the hours of duty for an aircraft dispatcher, except when circumstances or emergency conditions beyond the control of the air carrier require otherwise:

(1) *Maximum consecutive hours of duty.* No dispatcher shall be scheduled for duty as such for a period of more than 10 consecutive hours.

(2) *Maximum scheduled hours of duty in 24 consecutive hours.* If a dispatcher is scheduled for duty as such for more than 10 hours in a period of 24 hours, he shall be given a rest period of not less than 8 hours at or before the termination of 10 hours of dispatcher duty.

(3) *Dispatcher's time off.* Each aircraft dispatcher shall be relieved from all duty with the air carrier for a period of at least 24 consecutive hours during any 7 consecutive days or the equivalent thereof within any one month.

Flight Operations

40.351 *Operational control.* The air carrier shall be responsible for operational control.

(a) *Joint responsibility of aircraft dispatcher and pilot in command.* The aircraft dispatcher and the pilot in command shall be jointly responsible for the preflight planning, delay, and dispatch release of the flight in compliance with the applicable regulations of this subchapter and operations specifications.

Amendment 40–18

Deletion of Certain Definitions

Adopted: Aug. 7, 1959
Effective: Aug. 13, 1959
Published: Aug. 13, 1959 (24 F.R. 6580)
Correction: Sept. 9, 1959 (24 F.R. 7253)

Part 40 of the Civil Air Regulations contains definitions of four terms which are also defined in Part 60, and which pertain primarily to the air traffic rules. The Part 40 definitions of these terms are written differently from those in Part 60, even though the terms are intended to have the same meaning in both parts.

Inasmuch as section 40.2 states that the provisions of Part 60 shall be applicable to all air carrier operations conducted under the provisions of Part 40, unless otherwise specified, the repetition of the definitions in Part 40 is unnecessarily duplicative. To avoid this, and the obvious disadvantage of revising Part 40 each time that the definitions in Part 60 may be modified, those terms which have the same meaning in both parts but which pertain primarily to Part 60 and are defined therein should not be defined in Part 40 also. This amendment therefore eliminates the four definitions in Part 40.

Since this amendment is technical in nature, makes no substantive change, and imposes no additional burden on any person, notice and public procedure hereon are unnecessary, and it may be made effective without prior notice.

Amendment deleted the definitions of "air traffic clearance," "air traffic control," "control area," and "control zone" from section 40.5.

Amendment 40–19

Frequency of Pilot Proficiency Checks

Adopted: Sept. 24, 1959
Effective: Oct. 29, 1959
Published: Sept. 30, 1959 (24 F.R. 7865)

Part 40 of the Civil Air Regulations presently requires each pilot in command to successfully pass pilot proficiency checks at least twice in each 12-month period. Section 40.302(b) requires such checks to be given at intervals of not less than 4 months nor more than 8 months. Section 40.305 specifies similar requirements for pilots other than pilots in command.

Parts 40, 41, 42, and 46 specify the time interval between pilot proficiency checks differently which has resulted in varying interpretations as to requirements and administrative practices. Since no difference is intended between air carrier operations in this respect, all of the air carrier parts are being amended to make the frequency requirement of pilot proficiency checks the same.

Since this regulatory action imposes no additional burden upon any person, notice and public procedure hereon are unnecessary.

Amendment revised section 40.302(b) (1) and (3) and section 40.305.

Amendment 40–20

Retention of Flight Recorder Tapes and Clarification of Period the Flight Recorder Shall Be in Operation	Adopted: Sept. 30, 1959 Effective: Nov. 6, 1959 Published: Oct. 7, 1959 (24 F.R. 8089)

Section 40.208 of the Civil Air Regulations requires the installation of flight recorders on all airplanes of more than 12,500 pounds maximum certificated takeoff weight which are certificated for operations above 25,000 feet altitude. The regulations further require that the flight recorders shall be operating continuously during flight time.

In promulgating this regulation, the period of time for retention of the recorder tapes was not included in the rule as it was assumed that air carriers would retain these records for a sufficient length of time for the investigation of accidents and incidents which may have occurred during the time of flight. The tapes also can furnish information to the operator concerning performance and operation of these airplane types for which there does not exist a substantial amount of operational experience.

In view of the importance of the information obtained from flight recorders, and since there may be some question as to the length of time that such tape recordings should be maintained by the air carriers, the Federal Aviation Agency believes that a clarification of the rule is needed.

As stated above, section 40.208 requires that the flight recorders "shall be operating continuously during flight time." It was the intent of this regulation to require the operation of the recorder only during flight and not during taxi operation to and from the runway. Therefore, in order to clarify this point, the word "time" is being deleted from this phrase since flight time has been defined as block-to-block time. In deleting the word "time," it is intended that the flight recorder must be in full operating condition at the instant the aircraft starts its takeoff roll and be in continuous operation during the flight and until the aircraft has completed its landing at an airport.

Accordingly, section 40.208 is being amended to clarify these matters. Similar amendments are being made concurrently to Parts 41 and 42 of the Civil Air Regulations to provide identical rules for the types of air carrier operations covered by those parts.

Inasmuch as this amendment is a clarification of the present requirements and imposes no, or very little additional burden on any person, compliance with the notice and public procedure provisions of section 4 of the Administrative Procedure Act is unnecessary.

Amendment revised section 40.208.

Amendment 40–21

Approval of Air Carrier Training Programs; Qualification of Pilots Other Than Pilots in Command; Proficiency Checks for Pilots Other Than Pilots in Command	Adopted: Dec. 1, 1959 Effective: Jan. 1, 1961, except as provided in section 40.290 Published: Dec. 5, 1959 (24 F.R. 9765)

The Federal Aviation Agency published as a notice of rule making (24 F.R. 5246) and circulated as Civil Air Regulations Draft Release No. 59–3, dated June 25, 1959, a proposal to amend Part 40 of the Civil Air Regulations to require: (1) FAA approval of air carrier training programs; (2) appropriate aircraft ratings for pilots serving as other than pilots in command; and (3) more specific initial training and recurrent proficiency checks for pilots serving as other than pilots in command.

Interested persons have been afforded an opportunity to participate in the making of this amendment and due consideration has been given to all relevant matter presented.

Because of the importance of this amendment, each portion thereof has been evaluated in the light of such comments.

1. *FAA approval of air carrier training programs.* The air carriers commenting on this portion of the proposal expressed strong opposition to it. Briefly, the air carriers contend that the present regulatory scheme for the establishment of methods and procedures for crew member training programs has been adequate and that no justification has been shown for requiring FAA approval of such programs. The FAA is unable to agree with these contentions.

It must be emphasized that the training program is one of the most important factors in the safety of air carrier operations. The quality and scope of such programs are the key to insuring that all crew members are competent to perform their duties with the high degree of skill expected and required in air carrier operations. Under the provisions of the present regulation, the air carriers are given discretion in establishing "adequate" or "appropriate" training, or "training as necessary." As a result some air carriers have prepared and are administering excellent training programs. However, others have not achieved the minimum safety objective sought by the training requirements of sections 40.280 through 40.289. While the methods and procedures employed by the various air carriers in their training programs may differ to fit the particular operation of each air carrier, each training program must provide a uniform and minimum standard of flight and ground training necessary for safety in air transportation. Experience in the administration of the present regulations shows that this standard can only be achieved by FAA approval of each training program.

Accordingly, because of the vital importance which the air carrier training program has to safety in air carrier operations, each air carrier subject to this part will be required to obtain approval of its training program by a representative of the Administrator.

This final regulation will not alter the responsibility which each air carrier has at present for the preparation and administration of its training program. However, each air carrier will be required to submit its training program, and subsequent changes thereto, to the FAA for prior approval.

2. *Initial training qualifications of pilots other than pilots in command.* The complexity of modern aircraft and the operational demands of today's navigation, communication, and air traffic control systems require a high level of skill and competence for air carrier copilots. Many of the functions which are required of the copilot, particularly with respect to emergency procedures, must be performed properly or the safety of the flight may be seriously affected. In addition, in the event that the pilot in command becomes incapacitated during flight, the copilot must possess adequate knowledge and skill to fly the aircraft safely to a destination.

In order to properly determine the ability of the copilot to operate a particular type of aircraft, it was proposed in Draft Release 59-3 to provide for the issuance of appropriate aircraft type ratings for all pilots serving as other than pilots in command. However, upon reevaluation of the original proposal in the light of comments received, it appears that the objective of the original proposal can be achieved without requiring pilots serving other than as pilots in command to obtain an appropriate aircraft type rating, provided adequate flight training for those pilots who serve as second in command is provided in the initial and recurrent training requirements of this part and is part of the training program approved by the Administrator.

Accordingly, the original proposal has been modified in this regulation by omitting the aircraft type rating requirement. In lieu of a type rating, this regulation prescribes in section 40.282(c) certain minimum maneuvers and procedures in which it is considered necessary that pilots serving as second in command be proficient, and requires that they receive instruction and practice in such maneuvers and procedures during initial flight training.

The term "second in command" is used in this regulation in order to identify more precisely those pilots who perform the traditional functions of a copilot, as distinguished from the pilot in command and other pilots. In this respect, this regulation amends current section 40.261(c) to make it clear that where the air carrier is authorized to operate under instrument conditions or operates aircraft of more than 12,500 pounds maximum

certificated weight, the minimum pilot crew shall consist of a pilot in command and a pilot designated as second in command. An appropriate definition of "second in command" is added by this regulation. In keeping with these changes, an appropriate amendment is also being made to section 40.301.

It is considered that pilots qualifying to serve on airplanes other than as pilot in command or as second in command should, in the interest of safety, be required to receive the flight training specified in section 40.282(a) and demonstrate their ability to take off and land each type of airplane in which they are to serve, in addition to accomplishing the other training requirements provided in sections 40.280 and 40.281. Accordingly, such a requirement is prescribed in this regulation.

3. *Proficiency checks for pilots other than pilots in command.* In order to make certain that all pilots serving as second in command are initially proficient and continue to maintain their proficiency to pilot and navigate, and to perform their duties on, aircraft to which they are assigned for duty, it was proposed in Draft Release 59–3 to require proficiency checks to be given such pilots prior to their initial assignment to duty and twice each 12 months thereafter by a check pilot or a representative of the Administrator.

As indicated in the draft release, the present method of having the second in command checked by the pilot in command during daily operations is not an adequate method by which the continued proficiency of the second in command can be determined. Although the air carriers were opposed to this requirement, the Agency remains firm in its belief that in order to make certain that all pilots serving as second in command are initially proficient and continue to maintain such proficiency, they must be give a proficiency check by a designated check pilot or a representative of the Administrator. However, upon reconsideration of the original proposal in the light of comments received, the Administrator has concluded that an adequate level of safety will be maintained if such proficiency checks are given only once each 12 months to pilots serving as second in command. Accordingly, such requirements are reflected in this amendment.

In Draft Release 59–3, it was proposed to include in the proficiency check at least the takeoffs and landings and other flight maneuvers generally covered in section 40.282(a). However, the original proposal is being modified by this amendment to provide that the proficiency check for a pilot serving as second in command shall include an oral or written equipment examination, and at least the procedures and flight maneuvers specified in the new section 40.282(c).

Comment received indicated that interested persons opposing Draft Release 59–3 believed the proposal would require copilots to acquire and demonstrate the same level of proficiency as is presently required of pilots in command. The Administrator wishes to make it clear that identical proficiency standards will not be required for such pilots. Under the provisions of Part 40, a pilot assigned to perform copilot duties as second in command is required to hold a commercial pilot certificate and instrument rating, whereas a pilot in command is required to hold the higher rating of an airline transport pilot certificate with appropriate aircraft type ratings. In view of the difference in the certification requirements pilots serving as second in command will not be held to the high degree of skill required of a pilot in command. However, they will be required to demonstrate that they possess the knowledge and skill to perform their duties as a copilot safely and efficiently, and to navigate and pilot the airplane to which they are assigned safely to a destination in the event the pilot in command becomes incapacitated during flight.

This final regulation is so drafted as to permit the air carriers to use the flight crew method of training and checking pilots. Air carriers utilizing this method have found that it has economic advantages over the method of training and checking crew members individually and is an effective method of standardizing training. Although initial flight training in some proficiency check maneuvers will make it necessary in the interest of safety for the check pilot to occupy one of the pilot positions, it appears that many maneuvers can be conducted safely using the flight crew concept of training and checking pilots.

This regulation is being made effective January 1, 1961. This effective date will allow air carriers subject to Part 40 sufficient time in which to obtain FAA approval of their training programs and to accomplish the initial demonstration check of pilots other than pilot in command required by this amendment. However, each air carrier will be required to submit its training program to the FAA for approval not later than May 1, 1960.

Although compliance with the requirements prescribed in this regulation may result in some additional costs to the air carriers, it appears that such costs are outweighed by the considerations of safety involved.

Amendment added definition "second in command" to section 40.5; revised paragraph (c) of section 40.201; added a new sentence at the end of paragraph (a) and added a new paragraph (c) to section 40.282; revised the last sentence of paragraph (b) and deleted the last sentence of paragraph (c) of section 40.289; revised paragraph (b) of section 40.300; and revised sections 40.301 and 40.305.

The currently required parameters are time, heading, airspeed, altitude and vertical acceleration.

The FAA recognizes that flight recorders capable of recording additional operations and maintenance parameters would make available information which would be most useful for incident and accident investigation and for accident prevention purposes. Furthermore, it appears that such recorded information would be used by the air carriers in developing more efficient maintenance and operations procedures and in developing new methods of establishing maintenance schedules for engine, accessory, and component overhauls.

Comments received from certain of the manufacturers of flight recorders indicated that the September 1, 1960 date would not provide them with a sufficient period of time to manufacture and deliver equipment ordered for installation on those turbine-powered airplanes now in operation which previously have not been required to be so equipped. In addition, certain manufacturers stated that more recently developed recorders capable of recording additional parameters can be supplied by late 1960, and early 1961, and confirmed that some air carriers had indicated a very definite interest in these newer types of recorders.

After consideration of all the comments received and upon further investigation thereof, the Agency has concluded that a longer period of time should be authorized for compliance with this regulation as it applies to turbine-propeller powered airplanes. Turbojet airplanes, since they are certificated for operation above 25,000 feet, are currently required to be equipped with flight recorders. The FAA recognizes that difficulties may be encountered by the air carriers in accomplishing an orderly procurement and installation program and that a brief period of relief may be granted with respect to turbine-propeller powered airplanes without adversely affecting safety in air carrier operations. Accordingly, a compliance date of November 1, 1960, has been adopted in this final rule. Also, provision has been made in the regulation for the Director, Bureau of Flight Standards, to further extend the November 1, 1960, date for any air carrier who, prior to September 1, 1960, submits to the FAA, in writing, a request for such an extension, together with substantiating data, which shows to the satisfaction of the Director:

1. That the air carrier will be unable to comply with the November 1, 1960, date due to flight recorder procurement or installation problems and;

2. The action the air carrier has undertaken to insure that a progressive installation of the required flight recorder equipment will be completed at the earliest practicable date following November 1, 1960. In no event will the November 1, 1960, date be extended beyond May 1, 1961. This relaxation of the original proposal will provide the air carriers further opportunities to investigate the various types of recorders available and to proceed with the orderly procurement and installation of the required equipment at the earliest practicable time following the effective date of this rule.

It will be noted that neither the November 1, 1960, compliance date nor the provision for extension thereof applies to the large turbojet-powered airplanes or large nonturbine-powered airplanes certificated for operations above 25,000 feet altitude, since they are required by currently effective regulations to be equipped with flight recorders.

Certain air carriers requested that the Fairchild F–27 airplanes be specifically exempted from the requirements of this rule in view of the geographic areas in which they are operated or in consideration of the varied local service or low altitude types of operations in which they are engaged. The FAA, in its notice of proposed rule making, explained that it was proposing this regulation specifically to encompass all of the newer types of high-speed turbine-powered airplanes, whether certificated to operate above or below 25,000 feet, since they are frequently subjected to similar atmospheric forces. The F–27 is a modern turbine-powered transport type airplane and is capable of operating at high speeds. For these reasons, the Agency is convinced that all large turbine-powered airplanes should be equipped with flight recorders. Accordingly, the rules adopted herein make no exception for the F–27 airplane.

This amendment also clarifies the Agency's intent to require continuous operation of the flight recorder from the instant the aircraft starts its takeoff roll until it has completed its landing roll at an airport. Operation of the recorder is not required during taxi operations to or from the runway.

Interested persons have been afforded an opportunity to participate in the making of this regulation and due consideration has been given to all relevant matter presented.

Amendment revised section 40.208.

Amendment 40–28

Oxygen Mask Requirements and Altitude Training for Flight Crewmembers Assigned to Duty on Turbine-Powered Airplanes Operated above 25,000 feet	Effective: March 3, 1961 Adopted: Jan. 19, 1961 Published: Feb. 3, 1961 (26 F.R. 1055)

The currently effective provisions of section 40.203–T(c) of Part 40 of the Civil Air Regulations require one pilot at the controls of a turbine-powered airplane to wear and use an oxygen mask when operating above 25,000 feet, and the remaining flight crewmembers to wear their masks in a position permitting immediate placing of the masks on their faces for use, properly secured and sealed. A proviso to the currently effective rule relieves the one pilot at the controls of the necessity of using a mask at or below 30,000 feet if all flight crewmembers are equipped with a "quick donning" type of oxygen mask which is demonstrated to be satisfactory to a representative of the Administrator.

Civil Air Regulations Draft Release No. 60–15, dated August 24, 1960 (25 F.R. 8381), proposed certain amendments to the requirements for the use of oxygen masks by flight crewmembers and certain altitude training requirements for flight crewmembers assigned to duty on turbine-powered airplanes operated above 25,000 feet.

In Draft Release 60–15, it was proposed to retain that part of the currently effective rule requiring one pilot to wear and use an oxygen mask when operating above 25,000 feet and all other flight crewmembers to wear their masks in a position for ready use. However, it was proposed to amend the proviso to the current rule and increase the altitude above which one pilot must wear and use an oxygen mask from 30,000 feet to 35,000 feet, provided all flight crewmembers are equipped with a quick-donning type of oxygen mask and are wearing the same in a ready position for use. It was proposed to classify an oxygen mask as a quick-donning type only if the mask is demonstrated to be one capable of being immediately placed on the face from the position being worn, and is shown to meet the following criteria: (1) that the mask can be placed on the face for use, properly secured and sealed, with either hand; (2) that the action of donning the mask can be accomplished without disturbing glasses, headphones, or other equipment worn; and (3) that the action of donning the mask can be accomplished without distracting or delaying the flight crewmember from proceeding with his assigned emergency procedures.

Industry comments unanimously supported the proposal to raise the present limitation of 30,000 feet to 35,000 feet as the altitude above which one pilot at the controls must wear and use an oxygen mask at all times. It was recommended, however, that the altitudes be specified in terms of "flight levels," to accord with the terminology used in the air traffic rules of Part 60 for high altitude flights. This recommendation has been incorporated into the final rule.

The industry groups expressed opposition to the proposal to continue the requirement that above an altitude of 25,000 feet flight crewmembers on flight deck duty must wear an oxygen mask at all times. Comment was also critical of the other criteria proposed with respect to the donning of oxygen masks, particularly that set forth in the proviso of the proposed rule for the quick-donning type of mask.

In lieu of the donning criteria proposed, certain industry comment recommended, for several reasons, that the rule require only that oxygen masks be located in a ready position for placement on the face in a fully operative condition within a specific time limit, such as 5 seconds. Such a period of time is well within the period beyond which the lack of oxygen becomes a critical safety factor.

In light of the comments received, we have reevaluated the requirement that oxygen masks must be worn, as well as the criteria proposed for classifying a mask as a quick-donning type. At the time the wearing of oxygen masks was originally prescribed, the use of turbine-powered airplanes in civil air transportation had just begun. Thus, the lack of previous operating experience with such airplanes and the type of oxygen masks then available justified a most conservative approach to the requirements for oxygen masks. Since that time we have accumulated many thousands of hours of experience in the operation of turbine-powered airplanes having pressurized cabins and the occurrence of sudden decompressions has been infrequent. Furthermore, certain oxygen masks and their harnesses have so advanced in design that they can meet the standards prescribed for the

quick-donning concept. Upon consideration of these factors, we believe it is no longer necessary to require the oxygen mask to be worn on the person of flight crewmembers. However, above flight level 250 we consider it necessary to require that the oxygen masks, when not being used, be kept at all times in a condition for ready use, and so located as to be within the immediate reach at all times of the flight crewmembers while at their duty stations.

This final rule requires that, when operating above flight level 250, each flight crewmember be provided with an oxygen mask so designed that it is capable of being rapidly placed on the face from its ready position, properly secured, sealed, and supplying oxygen upon demand. The mask must also be so designed that upon completion of the donning action it does not prevent the flight crewmember from being able immediately to communicate with other crewmembers over the airplane intercommunication system. If flight crewmembers are provided with oxygen masks which meet these standards, the regulation requires one pilot at the controls of the airplane to wear and use an oxygen mask at all times while operating above flight level 250. However, as stated in the proviso to the rule, if each flight crewmember on flight deck duty is provided with a quick-donning type of oxygen mask, the one pilot at the controls of the airplane need not wear and use an oxygen mask while at or below flight level 350.

Upon consideration of comments received, the criteria proposed for the quick-donning type of oxygen mask have been changed to specify a donning time of 5 seconds. The proposal to require a demonstration that the mask is capable of being donned without disturbing headphones has been deleted. However, the Agency considers it necessary to require, as criteria for the quick-donning type of oxygen mask, a demonstration: (1) that the mask is capable of being placed on the face from its ready position, properly secured, sealed, and supplying oxygen upon demand with one hand and within 5 seconds; (2) that the donning of the mask can be accomplished without disturbing eye glasses and without delaying the flight crewmember from proceeding with his assigned emergency duties; and (3) that upon completion of the donning action, the oxygen mask does not prevent the flight crewmember from being able immediately to communicate with other crewmembers over the airplane intercommunication system.

The Agency has concluded that if all flight crewmembers are provided with an oxygen mask which qualifies as a quick-donning type of mask, they will be sufficiently equipped for protection against the dangers of hypoxia to justify not requiring one pilot at the controls to wear and use an oxygen mask while operating at or below flight level 350. Above that flight level, however, the time element becomes more critical and in the interest of safety we consider it necessary to require one pilot at the controls to wear and use an oxygen mask at all times.

The Agency believes that the initial and recurrent instructional training given flight crewmembers should include actual training and practice in the donning of the oxygen mask. If masks of the quick-donning type are provided by the air carrier, it should require each flight crewmember to demonstrate his ability to properly don the mask from its ready position, with one hand and within 5 seconds, and proceed with his emergency duties without delay. Such training and practice are equally as important to personal safety as the quick-donning characteristics of the mask which have been demonstrated by the air carrier.

Presently, the maximum certificated ceiling for transport category airplanes used in air carrier operations is 42,000 feet. If higher ceilings are authorized in the future for airplanes used in air carrier operations, the Agency will undertake to evaluate the present rules in light of such operations and, if necessary, prescribe additional oxygen equipment and operational procedures to insure the protection of all occupants of the airplane.

With regard to the proposal for pressure chamber indoctrination for each flight crewmember, after fully considering all comments received and all factors involved, we have concluded that such a requirement should not be adopted. We believe that the trainee experiencing hypoxia does not benefit from the experience as much as the persons who are objectively observing the occurrence; nor is he apt to recall what took place while under the effects of hypoxia. Flight crewmembers participating in the air carriers' approved training programs, which include films, lectures, and studies of all phases of the subject of high-altitude operations, will be equally well indoctrinated with the dangers attendant upon hypoxia and the need for compliance with the techniques and emergency procedures involved in the event of a rapid decompression.

Therefore, in lieu of experiencing the actual low pressure chamber indoctrination, we are requiring all flight crewmembers, as a part of their approved emergency training, to receive initial and recurrent instruction by means of lectures and films covering at least respiration, hypoxia, duration of consciousness at altitude when supplemental oxygen is not supplied, gas expansion, gas bubble formation, physical phenomena and incidents of decompression, and actual training and practice in the donning of the oxygen mask and operation of the oxygen equipment.

In lieu of the required films, the air carrier may use any other equivalent means of visual presentation which meets with the approval of a representative of the Administrator. One such means would be participation by flight crewmembers in actually observing other people undergoing high-altitude training in a low pressure chamber.

The rule also provides that each flight crewmember, prior to each flight, shall personally preflight his oxygen equipment to insure that the oxygen mask is functioning, fitted properly, and connected to appropriate supply terminals, and that the oxygen supply and pressure is adequate for use. Additionally, the rule requires that whenever it is necessary for one pilot to leave his station at the controls when operating above flight level 250, the remaining pilot shall don and use his oxygen mask until the other pilot has returned to his duty station.

Oxygen masks classified as quick-donning masks under the regulation in force prior to the effective date of this amendment will be considered as satisfactorily meeting the requirements prescribed by this amendment for quick-donning masks without further demonstration.

Interested persons have been afforded an opportunity to participate in the making of this amendment and due consideration has been given to all relevant matter presented. The Air Line Pilots Association (ALPA) requested that an industry-wide meeting be scheduled to review the subject of oxygen masks if the amendment adopted herein substantially differs from the intent of the proposals recommended by ALPA. Prior to publication of Draft Release 60–15, a conference was held by the Agency at which the ALPA and other representatives of the industry were afforded an opportunity to express their views and recommendations for the development of rules governing oxygen masks and their use. These views and recommendations were thoroughly considered in the preparation of proposals contained in Draft Release 60–15. In addition, interested persons also have been given an opportunity to submit written comments in response to Draft Release 60–15. All of the views and recommendations submitted in the conference and in response to the draft release have been carefully considered and evaluated in the preparation of this final rule. Moreover, as a result of this evaluation, many of these recommendations have been incorporated in the final rule. Accordingly, I find that additional rule making proceedings, as requested by the ALPA, are unnecessary for informed administrative action; and that this amendment should be adopted without further delay.

Amendment revised paragraph (c) of section 40.203–T and added a new paragraph (c) to section 40.286

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