Federal Aviation Agency

Washington, D.C.

Civil Aeronautics Manual 41

Certification and Operation Rules for Scheduled Air Carrier Operations Outside the Continental Limits of the United States

Supplement No. 3, CAM 41 dated Nov. 10, 1959 — *March 3, 1961*

SUBJECT: Revisions to CAM 41.

This supplement is issued to incorporate into CAM 41 Civil Air Regulations Amendments 41–28, 41–35, 41–36, and Special Civil Air Regulation No. SR–427B, which supersedes Special Civil Air Regulation No. SR–427A. This supplement also deletes Special Civil Air Regulation No. SR–429 which terminated February 2, 1961.

Amendment 41–28, concerning air carrier training programs and the qualification of and proficiency checks for pilots other than pilots in command, is now contained in CAM 41 as appendix B 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 B is being deleted.

Amendment 41–35 concerns the joint dispatch of flights by dispatchers, each of whom is qualified for the portion of the route within his assigned area of dispatch responsibility. It was issued and effective December 8, 1960.

Amendment 41–36 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 Special Civil Air Regulation No. SR–427A, which is new in its entirety, and the pages to be inserted in the addendum which contain the preambles of amendments 41–28, 41–35, and 41–36.

Remove the following pages:	*Insert the following new pages:*
V through VIII	V through VIII
25 through 26–1	25 through 26–1
42–1 through 44	43 and 44
47 and 48	47 through 48–5
55 and 56	55 through 56–1
161 through 164	161 and 162
177 through 187	—
P–27 and P–28	P–27 through P–28–3
P–33 through P–36	P–33 through P–39

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Attachments.

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Airman Rules

Pilot

Flight Radio Operator

Flight Engineer

Flight Navigator

Dispatcher

Flight Operation Rules

Dispatching Rules

Flight Preparation and Takeoff Rules

Flight Course and En Route Rules

Instrument Approach and Landing Rules

Miscellaneous Operations Rules

Definitions

Appendixes

Addendum

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 41.24a(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. 547, February 2, 1954, effective February 15, 1954.)

41.24a–3 *Oxygen requirements for clinical purposes (FAA policies which apply to sec. 41.24a(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. 547, February 2, 1954, effective February 15, 1954.)

41.24a–4 *Oxygen requirements for infants-in-arms (FAA policies which apply to sec. 41.24a(b)).* Provisions should be made for administering oxygen to infants-in-arms, and additional oxygen over that required by section 41.24a(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 disposable plastic mask which can be fitted to the face; (b) an infant size BLB oronasal 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. 547, February 2, 1954, effective February 15, 1954.)

41.24a–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 41.24a, 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 41.24–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 41.24c 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 completion 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 41-30, published in 24 F.R. 9840, Dec. 8, 1959, effective Nov. 30, 1959; Amendment 41-32, published in 25 F.R. 798, Jan. 30, 1960, effective Feb. 1, 1960; [Amendment 41-36, published in 26 F.R. 1057, 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 25,000 feet, and if at any point along the route to be flown the airplane can descend safely to a flight altitude of 14,000 feet or less within 4 minutes, oxygen shall be available at the rate prescribed by this part for a 30-minute period for not less than 10 percent of the number of passenger cabin occupants carried.

(2) When an airplane is operated at flight altitudes to and including 25,000 feet and cannot descend safely to a flight altitude of 14,000 feet within 4 minutes, or when

an airplane is operated at flight altitudes above 25,000 feet, oxygen shall be available at the rate prescribed by this part for not less than 10 percent of the number of passenger cabin occupants carried for the duration of flight following cabin depressurization at cabin pressure altitudes above 10,000 feet to and including 14,000 feet and, as applicable, to permit compliance with section 41.24–T (b) (2) and (3), except that not less than a 10-minute supply for all passenger cabin occupants shall be provided.

(3) For first-aid treatment of occupants who for physiological reasons might require undiluted oxygen following descent from cabin pressure altitudes above 25,000 feet, a supply of oxygen in accordance with the requirements of section 4b.651(b)(4) (see section 41.24b) shall be provided for 2 percent of the occupants for the duration of flight following cabin depressurization at cabin pressure altitudes above 8,000 feet, but in no case to less than one person. An appropriate number of acceptable dispensing units, but in no case less than 2, shall be provided. Means shall be provided to enable the cabin attendants to use this supply.

(f) *Passenger briefing.* Before flight is conducted above 25,000 feet, a crew member shall give instructions and demonstrations to the passengers sufficient to insure that all passengers are adequately informed regarding the location and operation of the oxygen-dispensing equipment and the necessity of using oxygen in the event of cabin depressurization.

41.24b *Equipment standards.*

(a) *Reciprocating-engine-powered airplanes.* The oxygen apparatus, the minimum rates of oxygen flow, and the supply of oxygen necessary to comply with the requirements of section 41.24 shall meet the standards established in section 4b.651 of this subchapter effective July 20, 1950: *Provided,* That where full compliance with such standards is found by the Administrator to be impracticable, he may authorize such changes in these standards as he finds will provide an equivalent level of safety.

(b) *Turbine-powered airplanes.* Prior to November 30, 1959, turbine-powered airplanes shall comply with the provisions of paragraph (a) of this section or, alternatively, with the provisions of this paragraph except that effective November

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pilot shall comply with the appropriate provisions of section 41.50.

41.52 *Initial pilot flight training and recent experience.*

(a) Deleted.

[(Deleted by amendment 41–28, published in 24 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961.)]

(b) 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 three take-offs and three landings in the airplane of the particular type on which he is to serve.

[41.53 *Training requirements.*

[(a) Each air carrier shall establish a training program sufficient to insure that each crewmember 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 crewmember 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 crewmember will know the functions for which he is responsible and the relation of those functions to those of other flight crewmembers. The initial program shall include at least the appropriate requirements specified in sections 41.53a through 41.53e.

[(d) The crewmember emergency procedures training program shall include at least the requirements specified in section 41.53e.

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

[(Amendment 41–28, published in 24 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961.)]

41.53–1 *Failure to complete instrument competency check (FAA policies which apply to sec. 41.53).* A scheduled air carrier should not utilize as a pilot-in-command in scheduled air transportation any pilot who has failed to perform satisfactorily any of the proficiency checks set forth in section 41.53–6.

(Published in 17 F.R. 8471, September 23, 1952, effective October 20, 1952.)

41.53–2 *General standards (FAA policies which apply to sec. 41.53).* Section 41.53–6 prescribes the minimum checks which should be given by an air carrier in determining the proficiency of a pilot-in-command. The air carrier may undertake these checks in any order or arrangement that will achieve complete coverage of the proficiency check in a minimum amount of flight time. Where demonstrated performance is unsatisfactory, additional training may be given during the check or later, and the unsatisfactory item rechecked during the check or later for satisfactory performance. The extent of this additional training should depend on the applicant's satisfactory flight proficiency demonstrated in other phases of the check which, in the opinion of the check pilot, would warrant such additional training. In addition, the air carrier should, where a particular type or condition of operation prevails, add to the checks listed in section 41.53–6.

(Published in 17 F.R. 8471, September 23, 1952, effective October 20, 1952.)

41.53–3 *Purpose of observing performance (FAA policies which apply to sec. 41.53).* When an agent of the Administrator is observing the performance of a proficiency flight, his primary objectives will be: (a) An evaluation of the air carrier's pilot flight proficiency training program, and (b) a determination as to whether the air carrier's check pilot is requiring demonstrated performance by the pilot-in-com-

mand as set forth in section 41.53–6 and the air carrier's pilot flight proficiency training program. Any problem pertaining to the performance of the pilot-in-command during the proficiency flight should be discussed only between the air carrier's check pilot and the agent of the Administrator. In the event there is a difference of opinion between the air carrier's check pilot and the agent as to methods of performing the required maneuvers, such differences of opinion should be resolved between the agent and the air carrier and should not be discussed on the flight deck during the proficiency flight.

(Published in 17 F.R. 8471, September 23, 1952, effective October 20, 1952.)

41.53–4 *Aircraft used in flight check (FAA policies which apply to sec. 41.53).*

(a) Where a pilot-in-command is scheduled to fly only one type of land aircraft or one type of seaplane, he should be given his proficiency checks in that type of aircraft he is scheduled to fly.

(b) Where a pilot-in-command is scheduled to fly more than one type of land aircraft and/or seaplane, his proficiency should be checked in all types of aircraft he is scheduled to fly. However, the following exceptions will be allowed:

(1) If a pilot is scheduled to fly 2-engine, 3-engine, and 4-engine land aircraft or any combination thereof, and/or more than one type of such aircraft, he should take his proficiency check in one of the larger and more complicated type of aircraft; or if only one of the smaller type aircraft is available, he may take his check immediately due in that aircraft, but his next

should be executed which will involve a change of direction of at least 180°. Performance should be judged on the basis of ability to establish a rapid descent at constant airspeed, stopping the descent at the minimum altitude specified without going below it, holding heading and altitude, and smooth pullup and climb.

(l) *Ability to tune radio.*[9]

(m) *Orientation.*[9]

(n) *Beam bracketing.*[9]

(o) *Cone identification.*[9]

(p) *Loop orientation.*[9]

(q) *Approach procedures.* An approach procedure should be made in the aircraft on the letdown aid for which the lowest minimums on a systemwide basis are authorized and include, where possible, holding patterns and air traffic control instructions which might be used by the pilot in day-to-day operations. If at the time of the proficiency flight the letdown aid affording the lowest minimums is not in operation at the point the check is given, the landing aid which affords the next lowest minimums on a systemwide basis should be used. Where a particular air carrier is authorized landing minimums based on instrument landing systems and ground control approach, the predominate landing aid on a systemwide basis should be utilized. In some cases a particular air carrier may be authorized its lowest landing minimums on a letdown aid which is not installed and operating at locations where the air carrier's pilots are based. In this case the air carrier should conduct the proficiency flights at locations where such an aid is installed and operating. All other approaches for which a particular operator may be authorized to use, such as ADF, LF/MR range, VOR, and VAR should be made and may be conducted in a simulator or other approved type trainer. A record should be maintained in the pilot's file which will indicate the date that these approaches were performed and the grade received. If these approaches (ADF, LF/MR range, VOR, and VAR) are not performed in a simulator or other approved type trainer, they should be accomplished on the proficiency flight.

(r) *Missed approach procedures.* (See par. (s) of this section.)

(s) *Traffic control procedures.* Missed approach procedures and traffic control procedures should be accomplished in a manner satisfactory to the authorized check pilot. The degree of satisfactory or unsatisfactory performance should be predicated on the pilot's ability to (1) maneuver the aircraft while performing these procedures, and (2) follow instructions either verbal or written which may be pertinent to the accomplishment of these procedures. Paragraphs (r) and (s) of this section may be accomplished while performing paragraph (q) of this section.

(t) *Crosswind landing.* A crosswind landing should be performed when practicable. Traffic conditions and wind velocities will dictate whether a crosswind landing is practicable. Performance should be judged on the technique used in correcting for drift on final approach, judgment in the use of flaps, and directional control during roll-out.

(u) *Landing under regular approach conditions.* Landing under regular approach conditions will necessitate a path of flight around the landing area of not more than a 180° turn but not less than a 90° turn. The pilot should be judged on the basis of altitude and airspeed control and his ability to maneuver under the minimum ceiling and visibility conditions prescribed.

(v) *Takeoffs and landings (with engine(s) failures).* If it is consistent with safety, traffic patterns, local rules, and laws, a simulated engine failure should be experienced during takeoff. The simulated failure should occur at any time after the aircraft has passed the V_1 speed pertinent to the particular takeoff and when practicable before reaching 300 feet. When performing the landing, the aircraft should be maneuvered to a landing while utilizing 50 percent of the available power units. The simulated loss of power should be concentrated on one side of the aircraft. The pilot's ability to satisfactorily perform this maneuver should be evaluated in the manner stated under paragraph (i) of this section.

[9] Paragraphs (l), (m), (n), (o), and (p) of this section should be accomplished in a satisfactory manner either (1) during a routine line check under the supervision of an authorized company check pilot, (2) in a simulated or synthetic trainer, or (3) during the proficiency flight. A record should be maintained in the pilot's file which will indicate the date, method utilized, and grade received in the performance of these items.

(w) *Judgment.* The pilot should demonstrate judgment commensurate with experience required of a pilot-in-command of air carrier aircraft.

(x) *Emergency procedures.* The emergency procedures should be applicable to the type of aircraft being flown and in accordance with the emergency procedures prescribed by the air carrier. A record should be maintained in the pilot's file which will list the emergency procedures accomplished, date performed, and grade received.

(Published in 17 F. R. 8472. September 23, 1952, effective October 20, 1952.)

41.53–7 *Requirements for approved training course—aircraft simulator (FAA rules which apply to sec. 41.53(b)).*

(a) *Application for approval.* An applicant desiring approval of an aircraft simulator training course shall submit his application in triplicate to the local Air Carrier Safety Inspector. The application shall contain a training course, including a description of the equipment, facilities, and material to be used, together with a letter to the Administrator of Federal Aviation Agency requesting approval [9a] of the course. The application shall be prepared in looseleaf form, shall include a table of contents, time required for each phase of the course; and procedures for administering the following training course:

(1) *Training course.* Flight equipment used shall be identical to that used in actual flight operations and the course [9b] shall incorporate at least the following subjects:

(i) All of the required maneuvers in section 40.282 (b) (1) of this subchapter and section 41.53–6 except the visual flight maneuvers performed around the airport.

(ii) A detailed description of the procedures to be employed in performing each of the required maneuvers applicable to the type aircraft being simulated.

(iii) Emergency procedures concerned with aircraft performance and also all emergency procedures outlined in the approved flight manual.

(b) *Revision of training course.* Requests for revisions of the approved training course, facilities, equipment, and material shall be accomplished in the manner established for securing approval of the original training course. Three copies of the revision shall be submitted in such form that entire pages of the approved course can be removed and replaced by the revision.

(c) *Satisfactory completion of course.* Determination of satisfactory completion of the approved aircraft simulator training course shall be made by an authorized representative of the Administrator or a check airman.

(d) *Cancellation of approval.* Failure to meet or maintain any of the standards established for the approval of a training course shall be considered sufficient reason for cancellation of approval.

(Published in 22 F. R. 8997, November 9, 1957, effective November 25, 1957.)

41.53–8 *Simulation requirements of aircraft simulators used in an approved training course (FAA policies which apply to sec. 41.53 (b)).* The aircraft simulator should fully simulate the following systems or conditions:

All normal cockpit noises (adjustable volume is permissible).
All surface controls.
Gust locks.
Trim tabs.
Landing gear operation.
Wheel brakes.
Steering mechanism used on the ground.
Wing flaps.
Powerplants.
Propellers.
Fuel and oil systems (constant rate of depletion is permissible).
Cockpit and circuit breaker station (circuit breakers relating to nonessential flight equipment need not be operable).
Hydraulic system.
Interior cockpit lights.
Fire detection and extinguishing systems.
Pressurization system for aircraft intended to operate above 25,000 feet.

[9a] The Administrator will review the training course, and if it is found adequate, will return an approved copy of the application to the applicant.

[9b] Any logical arrangement of the training course material will be acceptable, if all the required maneuvers are included, with appropriate description of techniques and procedures.

Deicing and anti-icing systems.
Oxygen system for the flight crew.

(Published in 22 F. R. 8998, November 9, 1957, effective November 25, 1957.)

[41.53a *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 crewmembers;

[(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 takeoff 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.

[(Amendment 41-28, published in 24 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961.)]

[41.53b *Initial pilot flight training.*

[(a) Flight training for each pilot shall include at least takeoffs 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.

[(b) Flight training for a pilot qualifying to serve as pilot in command or as second in command in a crew requiring three or more pilots 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 takeoff weight, takeoff using maximum takeoff 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 climbout shall be accomplished at a speed as close as possible to the takeoff 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 pullout 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 in a crew re-

quiring two pilots 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 navigational 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 41–28, published in 25 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961.)]

[41.53c *Initial flight navigator training.*

[(a) The training for flight navigators shall include the applicable portions of at least paragraphs (a) through (d), and (f) through (h) of section 41.53a.

[(b) Prior to serving as a required flight crewmember each flight navigator shall be given sufficient ground and flight training to become proficient in those duties assigned him by the air carrier. The flight training may be accomplished during scheduled flight under the supervision of a qualified flight navigator.

[(Admendment 41–28, published in 24 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961.)]

[41.53d *Initial flight engineer training.*

[(a) The training for flight engineers shall include at least the instruction specified in section 41.53a (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.

[(Admendment 41–28, published in 24 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961.)]

[41.53e *Initial crewmember emergency training.*

[(a) The training in emergency procedures shall be designed to give each crewmember appropriate individual instruction in all emergency procedures, including assignments in the event of an emergency, and proper coordination between crewmembers. At least the following subjects as appropriate to the individual crewmember 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 crewmembers 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 41–28, published in 24 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961; Amendment 41–36, published in 26 F.R. 1057, Feb. 3, 1961, effective Mar. 3, 1961.)]

[41.53f *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.

[(Amendment 41–28, published in 24 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961.)]

[41.53g *Recurrent training.*

[(a) Each air carrier shall provide such training as is necessary to insure the continued competence of each crewmember 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 a part of the training program, but not to exceed 12 months, check the competence of each crewmember 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 41.53j or 41.53k, respectively.

[(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.

[(Amendment 41–28, published in 24 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961.)]

[41.53h *Approval of training program.* The training program established by the air carrier under the provisions of sections 41.53 through 41.53g 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 41–28, published in 24 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961, except as noted in proviso.)]

[41.53i *Qualification requirements.*

[(a) No air carrier shall utilize any flight crewmember or dispatcher, nor shall any

such airman perform the duties authorized by his airman certificate, unless he satisfactorily meets the appropriate requirements of sections 41.48, 41.50, 41.51; 41.53 or 43.53g; and 41.53j through 41.53k; and 41.68 through 41.88.

[(b) Check airmen shall certify as to the proficiency of the pilot being examined, as required by sections 41.50, 41.53j, and 41.53k, and such certification shall be made a part of the airman's record.

[(Amendment 41–28, published in 24 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961.)]

[41.53j *Pilot checks; pilot in command.*

[(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 over a typical portion of the air carrier's routes to which the pilot is normally assigned, and shall be of sufficient duration for the check pilot to determine whether the individual being checked satisfactorily exercises the duties and responsibilities of pilot in command.

[(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 of 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 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.

[(2) The pilot proficiency check shall include at least the following:

[(i) The flight maneuvers specified in section 41.53b(b)(1), except that the simulated engine failure during takeoff need not be accomplished at speed V_1, nor at actual or simulated maximum authorized weight.

[(ii) Flight maneuvers approved by the Administrator accomplished under simulated instrument conditions utilizing the navigational facilities and letdown procedures normally used by the pilot: *Provided,* That maneuvers other than those associated with approach procedures for which the lowest minimums are approved 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.

[(3) Subsequent to the initial pilot proficiency check, an approved course of training in an aircraft simulator, if satisfactorily completed, may be substituted at alternate 6-month intervals for the proficiency check required by subparagraph (1) of this paragraph. The air carrier shall show that the flight characteristics, performance, instrument reaction, and control loadings of the applicable aircraft are accurately simulated in the aircraft simulator through all ranges of normal and emergency operations in accordance with subdivisions (i) through (vii) of this subparagraph.

[(i) The simulator shall represent a full-scale mockup of the cockpit interior, including normal flight crew stations and accommodations for the instructor or check airman.

[(ii) The effect of changes on the basic forces and moments shall be introduced for all combinations of drag and thrust normally encountered in flight. The effect of changes in airplane attitude, power, drag, altitude, temperature, gross weight, center

of gravity locations, and configuration shall be included.

[(iii) In response to control movement by a flight crewmember, all instrument indications involved in the simulation of the applicable airplane shall be entirely automatic in character unless otherwise specified. The rate of change of simulator instrument readings and of control forces shall correspond to the rate of change which would occur on the applicable airplane under actual flight conditions, for any given change in the applied load on the controls, in the applied power or in aircraft configuration. Control forces and degree of actuating control travel shall correspond to that which would occur in the airplane under actual flight conditions.

[(iv) Through the medium of instrument indication, it shall be possible to use the simulator for the training and checking of a pilot in the operational use of controls and instruments on the applicable airplane model during the simulated execution of ground operation, takeoff, landing, normal flight, unusual attitudes, navigation problems and instrument approach procedures. In addition, the simulator shall be designed so that malfunction of aircraft engines, propellers and primary systems may be presented and corrective action taken by the crew to cope with such emergencies.

[(v) Suitable course and altitude recorders shall be included.

[(vi) Communication and navigation aids of the applicable airplane shall be simulated for on-the-ground and inflight operations.

[(vii) Other aircraft systems and components shall be simulated to the extent found necessary by the Administrator.

[(c) Prior to serving as pilot in command in a particular type of airplane, a pilot shall have accomplished during the preceding 12 months either a proficiency check or a line check in that type of airplane.

[(Amendment 41–28, published in 24 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961; Amendment 41–33, published in 25 F.R. 3850, May 4, 1960, effective June 1, 1960.)]

[41.53k *Proficiency checks; 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 41.53b(c)(1). The pilot proficiency check may be demonstrated from either the right or left pilot seat.

[(b) The proficiency check for the second in command of a crew requiring 3 or more pilots shall be the same as required under section 41.53j(b).

[(c) Subsequent to the initial pilot proficiency check, an approved course of training in an aircraft simulator which meets the requirements of section 41.53j(b)(3), if satisfactorily completed, may be substituted at alternate 12-month intervals for the proficiency check required by paragraph (a) of this section.

[(d) Satisfactory completion of the proficiency check in accordance with the requirements of section 41.53j(b) will also meet the requirements of this section.

[(Amendment 41–28, published in 24 F.R. 9768, Dec. 5, 1959, effective Jan. 1, 1961.)]

41.54 *Flight time limitations for aircraft having a crew of one or two pilots.*

issued in accordance with the provisions of Part 27 of this subchapter.

41.86 *Qualification for route.* Each dispatcher within 6 months immediately preceding his qualification for a route, or part thereof, shall have made at least one trip over the route [, or part thereof,] on which he is to serve prior to dispatching any aircraft. In addition he must be familiar with:

(a) The contents of the air carrier operations manual;

(b) The radio facilities in the aircraft used; and

(c) With respect to the route, [or part thereof,] the following:

(1) The prevailing weather phenomena,

(2) The sources of weather information available,

(3) All phases of the air carrier operation,

(4) The maximum authorized loads for the aircraft used,

(5) The peculiarities and limitations of each radio navigational facility and similar information with regard to such additional facilities located off the route as are approved for use in obtaining fixes by means of cross bearings, and

(6) The effect of weather conditions on the radio reception of the aircraft used.

[(Amendment 41-35, published in 25 F.R. 12908, Dec. 16, 1960, effective Dec. 8, 1960.)]

41.87 *Maintenance of qualification.* Each dispatcher shall maintain his familiarity with the route or routes on which he dispatches aircraft.

41.88 *Route qualification expiration.* After 24 consecutive months of absence from dispatching duty over a route or part thereof, a dispatcher will no longer be considered qualified to dispatch aircraft over such route [, or part thereof.]

[(Amendment 41-35, published in 25 F.R. 12908, Dec. 16, 1960, effective Dec. 8, 1960.)]

Flight Operation Rules

Dispatching Rules

41.92 *Dispatching rules.*

(a) *Short distance operation.* Flights may be dispatched over any approved route between two terminal points.

(b) *Long distance operation.* Flights may be dispatched over any track between two terminal points within the route approved by the Administrator for the operation.

41.93 *Dispatching authorization.* Flights shall be started only on the authority of an aircraft dispatcher qualified for the route: [*Provided*, That where an aircraft dispatcher is qualified only on a portion of the route, he may dispatch the flight, but only after coordinating with dispatchers who are qualified for the other portions of the route between the points to be served.] In short distance operation this authority is not required at intermediate points specified in the original clearance unless the flight is delayed more than 30 minutes at any such point. In long distance operation redispatch is not required unless the flight is delayed more than 6 hours.

[(Amendment 41-35, published in 25 F.R. 12908, Dec. 16, 1960, effective Dec. 8, 1960.)]

41.94 *Dispatcher duty period.* A dispatcher may clear a flight only when he has been on duty at the station from which the clearance is effected for a period of time sufficient to become familiar with existing conditions. He must continue on duty until the aircraft has landed in completion of a trip, or has proceeded beyond his jurisdiction, or until he has been properly relieved by another qualified dispatcher.

41.95 *Use of weather reports and forecasts in dispatch.*

(a) Weather reports used to control flight movements shall be prepared from observations made and released by a source acceptable to the Administrator.

(b) Weather reports used shall be the latest reports available. Weather reports,

other than off-course or on-call reports made a part of the clearance form, shall not be more than one hour and 30 minutes old at the time the aircraft departs.

(c) Weather forecasts made by the United States Weather Bureau, in the case of dispatch from points within the United States, or other sources acceptable to the Administrator, in the case of dispatch from points outside of the United States, shall be taken into account.

41.96 *Weather minimums.*

(a) *Dispatch under contact flight rules, short distance operations.* Aircraft may be dispatched only if current weather reports and forecasts show a trend indicating that the ceilings and visibilities along the route to be flown are, and will remain, at or above the minimums required for flight under contact flight rules until the flight arrives at the next point of intended landing specified in the clearance.

(b) *Instrument or over-the-top dispatch, short distance operations.* Aircraft may be dispatched only if the observed weather information and current weather forecasts pertaining to the next point of intended landing specified in the clearance show a trend indicating that the ceiling and visibility will be at or above the minimums specified when the flight is scheduled to arrive; and at least one alternate airport, meeting the minimum weather requirements for the airport when used as an alternate, is designated in the clearance.

(c) *Dispatch, long distance operation.* Aircraft may be dispatched only in compliance with the following conditions:

(1) The current weather forecasts must indicate that the ceiling and visibility either at the next point of intended landing or at any required alternate therefor will be at or above the approved minimums at the time the flight is estimated to arrive.

(2) In the case of overwater flights or any other flight where the point of intended landing has no available alternate, the current weather forecasts must also indicate that the ceiling and visibility either at the point of departure or at any required alternate therefor will be above the approved minimums at the time of arrival back to such point from any point along the route closer than the point-of-no-return.

41.97 *Icing conditions.* Aircraft shall not be dispatched or flown into known heavy icing conditions and may be dispatched or flown into any less serious icing condition only if the aircraft is equipped for de-icing wings, propellers, and such other parts of the aircraft as are essential to safety.

41.98 *Fuel supply.*

(a) *Short distance contact operation.* An aircraft may be dispatched or take off only if it carries sufficient fuel, considering the wind and other weather conditions expected, to (1) fly to the next point of landing specified in the clearance and thereafter (2) for a period of at least 45 minutes at normal cruising consumption.

(b) *Short distance instrument or over-the-top operation.* An aircraft may be dispatched or take off only if it carries sufficient fuel, considering the wind and other weather conditions expected, to fly to the next point of landing specified in the clearance; and thereafter (1) to fly to and land at the most distant alternate airport designated for that point in the clearance; and thereafter (2) to fly for a period of at least 45 minutes at normal cruising consumption.

(c) *Long distance operation.* An aircraft may be dispatched or take off only if it carries sufficient fuel, considering the wind and other weather conditions expected, to fly to the next point of landing specified in the clearance; and thereafter (1) to fly to and land at the most distant alternate airport designated for that point in the clearance; and thereafter (2) to fly for a period of at least two hours at normal cruising consumption. An aircraft may be redispatched to return to the point of departure or to an alternate airport for that point only when such redispatch is accomplished while the aircraft has sufficient fuel to return to such point and thereafter to fly for a period of at least two hours at normal cruising consumption. In the case of a route approved without

an available alternate for a particular stop, an aircraft dispatched to that point must carry sufficient fuel, considering wind and other weather conditions expected, to fly to that point and thereafter for at least 3 hours at normal cruising consumption. The Administrator may require fuel in excess of any of the minimums specified in this paragraph when he finds that additional fuel is necessary on a particular route in the interest of safety and, in the case of an overland operation where adequate intermediate airports and navigational facilities are available, may permit the operation to be conducted with the

SPECIAL CIVIL AIR REGULATION NO. SR–427B

Effective: October 24, 1960
Issued: October 21, 1960

Fuel Reserves for Multiengine Turbine-Powered Airplanes

Special Civil Air Regulation No. SR–427, adopted October 23, 1958 (23 F.R. 8338), prescribed, for a one-year period, special minimum fuel reserves for multiengine turbine-powered aircraft (exclusive of turbopropeller-powered aircraft) used in scheduled air carrier operations outside the continental limits of the United States. Special Civil Air Regulation No. SR–427A, effective October 23, 1959 (24 F.R. 8254), extended these special fuel reserve requirements for an additional year, until October 23, 1960.

The minimum fuel reserves specified in SR–427 and SR–427A were adopted as an interim requirement, until additional operational experience with turbine-powered airplanes provided sufficient data for establishing firm fuel reserve standards in the operating parts of the Civil Air Regulations. Sufficient data upon which the Agency will propose such firm standards is now available, and it is contemplated that such standards will be incorporated in the forthcoming notice of proposed rule making covering a complete revision of Part 41. However, since the rule making procedures required for adoption of this new part will require several months, the provisions of SR–427A are being further extended to require the continued use of the interim fuel reserves by scheduled international air carriers operating turbojet airplanes.

Since this regulatory action extends the provisions of a previous regulation and imposes no additional burden upon any person, notice and public procedure hereon are unnecessary, and it may be made effective on less than 30 days' notice.

In consideration of the foregoing, the following Special Civil Air Regulation is hereby adopted, to become effective October 23, 1960:

Contrary provisions of section 41.98 of Part 41 of the Civil Air Regulations notwithstanding, a turbine-powered aircraft (exclusive of turbopropeller-powered aircraft) may be dispatched or take off only if it carries sufficient fuel, considering the wind and other weather conditions expected, to fly to and land at the next point of landing specified in the clearance; and thereafter (1) to fly for a period equal to 10 percent of the total time required to fly from the point of dispatch to the next point of landing specified in the clearance and land at such airport; and thereafter (2) to fly to and land at the most distant alternate airport designated for that point in the clearance; and thereafter (3) to fly for a period of 30 minutes at holding speed at 1,500 feet above the alternate airport elevation under standard temperature conditions. In the case of a route approved without an available alternate for a particular stop, an aircraft dispatched to that point shall carry sufficient fuel, considering wind and other

weather conditions expected, to fly to that point and thereafter to fly for at least 2 hours at normal cruise consumption. When an authorized representative of the Administrator finds that fuel in excess of any of the minimums specified in this paragraph is necessary on a particular route in the interest of safety, the Operations Specifications of the air carrier may be amended to require such additional fuel.

This Special Civil Air Regulation supersedes Special Civil Air Regulation SR–427A and shall terminate October 23, 1961, unless sooner superseded or rescinded.

Page 165 follows. (Pages 163 and 164 were removed by Supplement No. 3 dated March 3, 1961.)

These regulations, which were adopted on August 27, 1958, were not made mandatory until July 31, 1959, in recognition of the fact that currently operating turbine-powered airplanes were not type certificated in accordance with these provisions and operators would need reasonable time to arrange for appropriate design changes and procurement and installation of the required equipment.

The Administrator has been advised that, despite diligent efforts by air carrier operators and the manufacturer involved, compliance by July 31, 1959, is not possible, due primarily to the time required for system evaluation and late delivery of necessary parts. It now appears that an additional four months will be required to show full compliance with the requirements.

The selection of the July 31, 1959, date for compliance was predicated on the belief that this afforded sufficient time to make the necessary changes. It is recognized, however, that difficulties have been encountered by the air carriers in accomplishing an orderly procurement and installation program without serious disruption of scheduled service and that a period of relief may be granted without affecting safety adversely in air carrier operations by extending the compliance date to November 30, 1959. As before, the currently effective oxygen system requirements will apply 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.

Since this amendment grants relief by extending the date for compliance with a requirement of the Civil Air Regulations, and delay in extending such relief would impose an undue hardship, the Administrator for good cause finds that notice and public procedure hereon would be contrary to the public interest and may be omitted and that this amendment may be made effective immediately.

Amendment changed the date "July 31, 1959" to "November 30, 1959" wherever it appeared in sections 41.24–T(a) and 41.24b(b), and revised the first sentence of section 41.24a–T(a).

Amendment 41–26

Frequency of Pilot Proficiency and Line Checks	Adopted:	Sept. 24, 1959
	Effective:	Oct. 29, 1959
	Published:	Sept. 30, 1959 (24 F.R. 7865)

Part 41 of the Civil Air Regulations presently requires each pilot in command to successfully pass a technique check (proficiency check) at least twice each year at intervals of not less than 4 months.

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.

In addition, Part 41 requires the pilot in command to pass a route competency check (line check) twice each year, whereas only one such check is required for domestic operations. Experience has shown that only one line check is necessary, hence Part 41 is being amended to delete one line check each year.

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

Amendment revised section 41.53 (a) and (b).

Amendment 41-27

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. 8090)

Section 41.25(t) 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 the 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 41.25(t) 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 41.25(t) is being amended to clarify these matters. Similar amendments are being made concurrently to Parts 40 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 41.25(t).

Amendment 41-28

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 41.53h Published: Dec. 5, 1959 (24 F.R. 9768)

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 41 of the Civil Air Regulations to require: (1) Essentially the same training program requirements in Part 41 as are currently contained in Part 40; (2) FAA approval of air carrier training programs; (3) appropriate aircraft ratings for pilots serving as other than pilots in command; and (4) more specific initial training and 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. *Training program requirements for Part 41.* Parts 40 and 42 of the Civil Air Regulations currently require each air carrier to establish a training program sufficient to insure that each crew member used by the air carrier is adequately trained and maintains adequate proficiency to perform the duties to which he is assigned. Part 41 of the Civil Air Regulations currently requires periodic instruction to be given all pilots, but does not contain a specific requirement for the establishment of a training program for each crew member.

Accordingly, as proposed in Draft Release 59–3, in the interest of safety and uniformity in air carrier operations, this amendment incorporates into Part 41 training program requirements essentially the same as those contained in Part 40. In adopting the training program requirements prescribed herein, due consideration has also been given to all comments received in response to Civil Aeronautics Board Draft Release No. 58–24 dated December 24, 1958 (24 F.R. 145) which proposed, among other things, training program requirements for Part 41 essentially the same as those now contained in Part 40.

2. *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 Federal Aviation Agency 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 section 41.53. 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 Federal Aviation Agency for prior approval.

3. *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, or as second in command of an aircraft requiring three or more pilots.

Part 41 currently provides for two different types of pilot crew complements: namely, (a) a two-pilot crew and (b) a three or more pilot crew. With respect to the two-pilot crew, upon reevaluation of the original proposal in light of comments received, it appears

that the objective of the original proposal can be achieved without requiring the second in command in a two-pilot crew to obtain an appropriate aircraft type rating, provided adequate flight training for such a pilot 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 for the second in command in a two-pilot crew. In lieu of a type rating, this regulation prescribes in section 41.53b(c) certain minimum maneuvers and procedures in which it is considered necessary that pilots serving as second in command in a two-pilot crew be proficient, and requires that they receive instructions and practice in such maneuvers and procedures during initial flight training.

With regard to an operation requiring a crew combination of three or more pilots, Part 41 presently provides that the pilot in command and second in command shall hold valid airline transport pilot certificates and ratings for the aircraft when serving in such a crew combination. Since the pilot designated as second in command in a crew requiring three or more pilots is required by the present regulations to have the same basic qualifications as the pilot in command, it is deemed reasonable to require such second in command to be initially trained on the aircraft to a degree of proficiency commensurate to that of the pilot in command. Accordingly, the provisions of this amendment require a pilot serving as second in command in an operation requiring three or more pilots to comply with the same initial training requirements as apply to the pilot in command.

With respect to pilots other than the pilot in command and second in command in a crew complement requiring three or more pilots, the original proposal has been modified so as not to require such pilots to obtain an aircraft type rating. In lieu of a type rating, this regulation requires in the interest of safety that such pilots accomplish the initial training prescribed in section 41.53b(a). In this connection it should be understood that such pilots will not be required to comply with the training requirements specifically applicable to a pilot in command, or a second in command serving in a crew requiring three or more pilots.

4. *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.

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 given 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 take offs and landings and other flight maneuvers generally covered in section 41.53b(a). However, the original proposal is being modified by this amendment to provide that the proficiency check for the second in command of a two-pilot crew shall include an oral or written equipment examination, and at least the procedures and flight maneuvers specified in new section 41.53b(c).

The original proposal is also modified with respect to the second in command of a crew requiring three or more pilots to require the second in command to take the same proficiency check as is presently required for a pilot in command, except that the second in command is required to take the proficiency check only once each 12 months.

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 41, a pilot assigned to duty on an aircraft as second in command in a crew of two pilots is presently 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 certificate with appropriate aircraft type ratings. In view of this

difference in the certification requirements, pilots serving as second in command in two pilot crews 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 and 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 41 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 amendment may result in some additional costs to the air carriers, it appears that such costs are outweighted by the considerations of safety involved.

Amendment deleted paragraph (a) of section 41.52, amended section 41.53, and added new sections 41.53a through 41.53k.

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discharging such a responsibility. This regulation would impose no such responsibility on the flight crew members. This regulation, like all other regulations adopted by the Agency, would be enforced through the various enforcement processes of the Agency. It is expected of the carriers that they would advise their passengers of the restriction in such a regulation and make suitable reports to the Agency of any known violations. The only time it would be expected that a crew member would be required to take direct action would be when such action is required for the safety of the flight. This is no greater burden than that now on the crew members to do whatever is necessary for the safety of the aircraft and the persons aboard it.

Several comments were made pointing out that the proposed rule prohibited an air carrier from serving an alcoholic beverage to any person if such person "is or appears" to be intoxicated. It was pointed out that a person might not appear to be intoxicated when, in fact, he or she was, and those commenting did not feel that it was proper to impose responsibility for this type of judgment. With this the Agency agrees and the words "is or" will be stricken from the proposed regulation, so that the carrier and its personnel may rely on the appearance of the passenger in determining whether or not to serve him or her alcoholic beverages. Two of the carriers proposed that action on the proposed regulation be delayed to permit the air carrier industry to develop a code which would control the amount and time of serving alcoholic beverages aboard aircraft. The Agency is strongly in favor of any such voluntary agreements that can be reached among the carriers. To the extent that they are in effect and complied with, they would clearly contribute to decreasing any safety hazard arising from the consumption of alcoholic beverages aboard air carrier aircraft. On the other hand, a code of this kind could not reach the principal problem involved—that of uncontrolled consumption by a passenger of his own liquor supply. Therefore, the adoption of a code, while extremely helpful, would not meet the entire problem. The adoption of this regulation will not in any way inhibit the industry from adopting their own code, and in fact such a move would be viewed with favor by this Agency.

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 added new section 41.135.

Amendment 41–32

Requirements for Use of Oxygen Masks by Flight Crew Members of Turbine-Powered Airplanes	Adopted: Jan. 28, 1960 Effective: Feb. 1, 1960 Published: Jan. 30, 1960 (25 F.R. 798)

Currently effective section 41.24a–T provides that on and after February 1, 1960, when operating at flight altitudes above 25,000 feet, one pilot at the controls of the airplane shall wear and use an oxygen mask at all times and all other flight crew members on flight deck duty shall be provided with oxygen masks, connected to appropriate supply terminals, which shall be worn in a manner that will permit immediate placing of the masks on their faces for use, properly secured and sealed.

The date for compliance with this regulation was to have been November 30, 1959, but was deferred for 60 days in order to make further studies of this matter upon representation that this requirement is not necessary to achieve the highest degree of safety in air transportation and that compliance with this regulation may detract from the required crew coordination and adversely affect safety. These studies have been made during the intervening period.

No evidence has been presented during this time which validates the contention that the regulation is not necessary to achieve the highest practicable degree of safety; neither has the claim been substantiated that the regulation would adversely affect safety. It is concluded, therefore, that the original basis for the regulation remains valid and that it should remain in effect.

During the course of the study it was noted that the various types of masks intended to be used in compliance with this regulation differ in the facility with which they can be donned. For example, some masks can be placed on the face with one hand so that they are properly secured and sealed. This is accomplished by having retaining means already in place on the head. This feature permits the mask to be placed on the face with minimum delay and without disturbing headphones, glasses, or hats. Thus, the crew member can proceed with emergency procedures quickly and without distraction. Therefore, it is believed that if all crew members are provided with masks having these characteristics, safety would not be adversely affected by permitting the aircraft to be operated at flight altitudes up to 30,000 feet without requiring one pilot at the controls to wear and use an oxygen mask. Therefore, the regulation is being relaxed to the extent that a pilot need not wear a mask at or below 30,000 feet if all flight crew members are equipped with masks having these characteristics. In order for any air carrier to take advantage of this relaxation, it will be necessary for existing masks to be reevaluated by a satisfactory demonstration of these characteristics to a representative of the Administrator.

It should be emphasized, however, that the Federal Aviation Agency will continue to study the need for and use of oxygen masks by flight crew members. If shown necessary by service experience, additional rule making action will be undertaken.

Since this amendment grants relief by extending the altitude above which masks shall be worn in compliance with a requirement of the Civil Air Regulations, the Administrator finds that notice and public procedure hereon are not necessary, and that this amendment may be made effective immediately.

Amendment revised section 41.24a–T(c).

Amendment 41–33

Frequency of Pilot Line Checks

Adopted: Apr. 27, 1960
Effective: June 1, 1960
Published: May 4, 1960
(25 F.R. 3850)

Section 41.53j(a) of the Civil Air Regulations presently requires in part that a pilot shall satisfactorily accomplish a line check prior to serving as pilot in command and at least once each 12 months thereafter. This has normally been termed within the industry as the annual or yearly line check for the pilot in command.

By letter dated February 9, 1960, the Air Transport Association of America, on behalf of its member air carriers, recommended that the time interval between line checks be specified in the same manner as Civil Air Regulations Amendments 40–19 and 41–26, which clarified the time intervals between proficiency checks. The ATA advises that such a clarification will simplify recordkeeping and administration of the line check in the same way that the proficiency check requirements have been simplified.

The FAA has considered the foregoing recommendation and believes that the requirements with respect to the frequency of pilot line checks should be amended to provide the clarification requested and to make such requirements consistent with the frequency requirements for pilot proficiency checks.

Since this regulatory action imposes no additional burden upon any person, notice and public procedure hereon are unnecessary, and it may be made effective on less than 30 days' notice.

Amendment revised section 41.53j by adding two new sentences after the first sentence.

Amendment 41–34

Installation of Flight Recorders on Turbine-Powered Airplanes

Adopted: July 12, 1960
Effective: Aug. 18, 1960
Published: July 19, 1960 (25 F.R. 6827)

The Federal Aviation Agency published a notice of proposed rule making in the Federal Register (25 F.R. 2734) stating that it had under consideration certain amendments to Parts 40, 41, and 42 of the Civil Air Regulations to require the installation and use of flight recorders on all large (more than 12,500 pounds maximum certificated takeoff weight) turbine-powered airplanes after September 1, 1960. The proposal was circulated to the aviation industry as Draft Release 60–6, dated March 28, 1960, and comments were requested on or before May 3, 1960.

The Air Transport Association, on behalf of the scheduled air carriers, raised specific objections to the proposed effective date of September 1, 1960. The airline stated that the date prescribed could only be met by removing airplanes from service to complete the required installations. This, they affirmed, would impose unreasonable interruptions of schedules and add undue burdens of additional expense. Further, it was stated that some air carriers may desire to equip their airplanes with a more sophiscated type of recorder capable of recording additional parameters of information which would be of value to their operations and maintenance, as well as for incident and accident investigation purposes. 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 airplane 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 new 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 deleted section 41.25(t) and added a new section 41.25a.

Amendment 41–35

Aircraft Dispatcher; Qualification for Route

Adopted: Dec. 8, 1960
Effective: Dec. 8, 1960
Published: Dec. 16, 1960
(25 F.R. 12908)

Section 41.86 of the Civil Air Regulations states in part that "Each dispatcher within 6 months immediately preceding his qualification for a route, or part thereof, shall have made at least one trip over the route on which he is to serve prior to dispatching any aircraft." Section 41.88 states that "After 24 consecutive months of absence from dispatching duty over a route or part thereof, a dispatcher will no longer be considered qualified to dispatch aircraft over such route." Section 41.93 states in part that "Flights shall be started only on the authority of an aircraft dispatcher qualified for the route."

While these requirements were appropriate in the days when aircraft were dispatched from point to point along a single route involving relatively short distances, the changing nature of international scheduled air carrier operations has indicated a need to amend these requirements accordingly. The advent of modern aircraft has resulted in long nonstop flights traversing several dispatch areas. A literal interpretation of sections 41.86, 41.88, and 41.93 would, today, require each dispatcher who initially dispatches a long nonstop flight to be qualified over the entire route of the flight, even though the flight proceeds far beyond the limits of his area of responsibility, and into and through areas for which other dispatchers exercise responsibility. This would require the air carriers to qualify, by actual flight, many of these dispatchers over routes and portions of routes far removed from the geographic areas for which they have dispatch responsibility. Such qualification flights would impose an undue burden on the air carriers which is not required in the interest of safety. The joint dispatch of these flights by dispatchers, each of whom is qualified for the portion of the route within his assigned area of dispatch responsibility, is operationally feasible and consistent with safety requirements.

An overall revision of Part 41 of the Civil Air Regulations is in the process of being prepared as a notice of proposed rule making. This proposed revision will cover the entire subject of dispatcher qualification and dispatch procedures. However, as it will be several

months before a revised Part 41 can become effective, immediate regulatory action to relax the dispatcher qualification requirements in the case of joint dispatch procedures is necessary.

As this amendment imposes no burden upon any person, but provides relief from present requirements, compliance with the notice and public procedure provisions of the Administrative Procedure Act is not required, and it may be made effective immediately.

Amendment added the words "or part thereof" to the introductory paragraph and to paragraph (c) of section 41.86 and to section 41.88, and added a proviso at the end of the first sentence of section 41.93.

Amendment 41–36

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. 1057)

The currently effective provisions of section 41.24a–T(c) of Part 41 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 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 fact 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 completition 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 supply 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. Addtionally, 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 41.24a–T and added a new paragraph (c) to section 41.53e.

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