

Federal Aviation Agency
Washington, D.C.

Civil Aeronautics Manual 46

Scheduled Air Carrier Helicopter Certification and
Operation Rules

Supplement No. 4, CAM 46 dated August 1959

August 1, 1962

SUBJECT: Revisions to CAM 46

This supplement is issued to incorporate into CAM 46 Civil Air Regulations Amendment 46-7 and Special Civil Air Regulation No. SR-446A.

Amendment 46-7 concerns flight crewmember qualifications. It was issued July 16, 1962, to become effective August 21, 1962.

Special regulation SR-446A concerns the use of portable frequency modulation (FM) type radio receivers on aircraft during flight. It was issued May 22, 1962, to become effective May 25, 1962, and supersedes Special Civil Air Regulation No. SR-446.

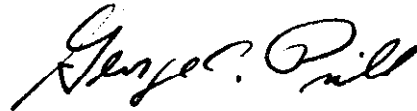
New or revised material is enclosed in black brackets on the pages submitted with this supplement, except Special Civil Air Regulation No. SR-446A and the pages in the addendum containing the preambles of amendments.

Remove the following pages:

III
13 through 14-1
33 and 34
P-7 and P-8

Insert the following new pages:

III
13 through 14-1
33 and 34
P-7 through P-10



GEORGE C. PRILL, Director,
Flight Standards Service.

Attachments.

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[46.301 Pilot recent experience. No air carrier shall schedule a pilot to serve as a pilot in scheduled air transportation unless within the preceding 90 days he has made at least 3 takeoffs and at least 3 landings in a helicopter of the particular type on which he is to serve; 2 of these landings shall be made from approaches with a simulated one-engine-inoperative condition in multiengine helicopters, or, in autorotation in single-engine helicopters; and, if the pilot is scheduled to serve in night air transportation, at least 1 of the 2 simulated one-engine-inoperative or autorotative landings shall have been made during hours of darkness.]

(Part 46, 23 F.R. 2264, Apr. 8, 1958, effective Oct. 1, 1958; as amended by amdt. 46-7, 27 F.R. 6925, July 21, 1962, effective Aug. 21, 1962.)

46.302 Pilot checks.

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

comes 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 helicopter type, the pilot proficiency check shall be given alternately in helicopters of each type flown by him.

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

(i) Maneuvers consisting of approaches and landings with simulated one engine inoperative, normal take-offs and landings, crosswind landings, climbs and climbing turns, steep turns, maneuvering at minimum speed, rapid descent and quick stops, and a review of the emergency procedures specified in section 46.286.

(ii) An oral equipment examination covering the subjects specified in section 46.281(d). Such examination may be accomplished in the air carrier's ground school or during a proficiency or line check.

(Part 46, 23 F.R. 2264, Apr. 8, 1958, effective Oct. 1, 1958; as amended by amdt. 46-2, 24 F.R. 7866, Sept. 30, 1958, effective Oct. 29, 1959; amdt. 46-3, 25 F.R. 3850, May 4, 1960, effective June 1, 1960.)

46.303 Pilot route and heliport qualification requirements.

(a) An air carrier shall not utilize a pilot as pilot in command until he has been qualified for the route on which he is to serve in accordance with paragraphs (b), (c), and (d) of this section and the appropriate instructor or check pilot has so certified.

(b) Each such pilot shall demonstrate adequate knowledge concerning the subjects listed below with respect to each route to be flown:

- (1) Weather characteristics,
 - (2) Navigational facilities,
 - (3) Communication procedures,
 - (4) Type of en route terrain and obstruction hazards,
 - (5) Minimum safe flight levels,
 - (6) Position reporting points,
 - (7) Holding procedures,
 - (8) Pertinent traffic control procedures,
- and

(9) Congested areas, obstructions, physical layout, and all approach procedures for each regular, provisional, and refueling heliport approved for the route.

[(c) Each such pilot shall make an entry as a member of the flight crew at each heliport into which he is to fly. The entry shall include a landing and takeoff under day HVR weather conditions to permit the qualifying pilot to observe the heliport, surrounding terrain, and any obstructions to landings and takeoffs. The qualifying pilot shall occupy a seat in the pilot compartment and shall be accompanied by a pilot qualified at the heliport.]

(d) Each such pilot to be qualified for night operations in the carriage of passengers shall have been qualified in accordance with paragraphs (b) and (c) of this section, and in addition shall have made one trip over the route at night accompanied by a pilot who is qualified over the route for such operations.

(Part 46, 23 F.R. 2264, Apr. 8, 1958, effective Oct. 1, 1958; as amended by amdt. 46-7, 27 F.R. 6925, July 21, 1962, effective Aug. 21, 1962.)

[46.304 Maintenance and reestablishment of pilot route and heliport qualifications for particular trips.

[(a) To maintain pilot route and heliport qualifications, each pilot being utilized as pilot in command shall have made, within the preceding 3-month period, at least one trip, as pilot or other member of a flight crew, between the terminals into which he is scheduled to fly. In order to maintain qualification for night operations, this trip must have been made during the hours of daylight.

[(b) In order to reestablish pilot route and heliport qualifications after absence from a route or a heliport thereon for a period in excess of 3 months, a pilot shall comply with the provisions of section 46.303.]

(Part 46, 23 F.R. 2264, Apr. 8, 1958, effective Oct. 1, 1958; as amended by amdt. 46-7, 27 F.R. 6925, July 21, 1962, effective Aug. 21, 1962.)

Flight Time Limitations

46.320 Flight time limitations.

(a) An air carrier shall not schedule any

flight crew member for duty aloft in scheduled air transportation or in other commercial flying if his total flight time in all commercial flying will exceed the following flight time limitations:

- (1) 1,000 hours in any year,
- (2) 100 hours in any month,
- (3) 30 hours in any 7 consecutive days.

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

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

(d) Each flight crew member engaged in scheduled air transportation shall be relieved from all duty with the air carrier for at least 24 consecutive hours during any 7 consecutive days.

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

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

(Part 46, 23 F.R. 2264, Apr. 8, 1958, effective Oct. 1, 1958.)

Flight Operations

46.351 Operational control. The air carrier shall be responsible for operational control.

(a) *Responsibility of the air carrier.* The air carrier shall be responsible for:

(1) The exercise of authority as necessary over the initiation, continuation, and diversion or termination of a flight; and

(2) Monitoring the progress of each flight and providing the pilot with all information necessary for the safety of the flight.

(b) *Responsibility of the pilot in command.* The pilot in command shall be responsible for the preflight planning and the operation of the flight in compliance with the applicable regulations of this subchapter and operations specifications. During flight

he shall be in command of the helicopter and crew and shall be responsible for the safety of the passengers, crew members, cargo, and helicopter.

(Part 46, 23 F.R. 2264, Apr. 8, 1958, effective Oct. 1, 1958.)

46.352 *Operations notices.* Each air carrier shall notify the appropriate operations personnel promptly of all changes in equipment and operating procedures, including known changes in the use of navigational aids, heliports, air traffic control procedures

SPECIAL CIVIL AIR REGULATION NO. SR-446A

Effective: May 25, 1962
Adopted: May 22, 1962
Published: May 25, 1962
(27 F.R. 4906)

Use of Portable Frequency Modulation (FM)
Type Radio Receivers on Aircraft During Flight

In 1961, during tests conducted by the Federal Aviation Agency's Aviation Research and Development Service, it was found that radio receivers having local oscillators operating within or near the VHF omnirange (VOR) frequency band (108 to 118 Mcs.) cause interference which adversely affects the operation of an aircraft's VOR navigational system. Various types of portable radio receivers (i.e., radio receivers capable of being carried aboard an aircraft by a passenger) were used in these tests to determine which would produce interference to the VOR equipment. It was determined that the portable frequency modulation (FM) radio receiver is the only type radio receiver, which is commonly used by the general public, that would create this unwanted interference. Therefore, it was found that immediate regulatory action was necessary in order to provide adequately for safety in air commerce.

Accordingly, on May 4, 1961, the Federal Aviation Agency issued Special Civil Air Regulation No. SR-446 (26 F.R. 4011) to become effective May 25, 1961. This regulation, which will expire May 24, 1962, prohibits the operation of portable FM radio receivers during flight on all civil aircraft of the United States operated by an air carrier or a commercial operator. It also prohibits the operation of portable FM radio receivers on all other VOR-equipped civil aircraft of the United States while such VOR equipment is being used for navigational purposes. The added restriction in the case of aircraft operated by an air carrier or a commercial operator was necessary since most of these aircraft are equipped with VOR navigational equipment and it would be difficult, if not impossible, for a passenger to know when the pilot in command was depending upon this equipment for navigational purposes. In addition, although not all portable FM radio receivers utilize local oscillators which will create interference, it was necessary to make the rule applicable to all portable FM radio receivers since it would not be feasible to expect the general public, airline personnel, or air crewmembers to distinguish which will cause this interference.

The tests which disclosed the interference problems caused by FM radio receivers were not completed at the time SR-446 was issued in 1961. Therefore, to simplify revision of the rule if additional interference problems were found by the tests, SR-446 was issued as a temporary rule, effective for a one-year period. When SR-446 was issued, the Agency had intended, prior to its expiration, to incorporate the provisions of the rule into the applicable operating parts, i.e., Parts 40, 41, 42, 43, 45, and 46.

However, since the final evaluation of these tests by all interested industry parties has not been completed, this action has not been taken. Accordingly, since the conditions under which SR-446 was issued still exist, it is necessary, in order to provide adequately for safety in air commerce, to extend the provisions of that rule for a period of one year.

Since this regulation extends the provisions of a currently effective regulation which expires on May 24, 1962, and a lapse in the effectiveness of the regulation would endanger safety in air commerce, I find that notice and public procedure hereon would be contrary to the public interest, and that good cause exists for making it effective on less than 30 days' notice.

In consideration of the foregoing, Special Civil Air Regulation No. SR-446 is superseded by the following Special Civil Air Regulation which is hereby adopted to become effective on May 25, 1962:

No person shall operate, nor shall any operator or pilot in command of an aircraft permit the operation of, a portable frequency modulation (FM) radio receiver on the following civil aircraft of the United States while such aircraft are engaged in flight in air commerce: (a) Aircraft operated by an air carrier or commercial operator; and (b) any other aircraft equipped with VHF omnirange (VOR) navigational equipment while such VOR equipment is being used for navigational purposes.

This special regulation supersedes Special Civil Air Regulation No. SR-446 and shall remain in effect for one year unless sooner superseded or rescinded by the Federal Aviation Agency.

Also, it will be noted that paragraph (b) (15) of section 46.508 has been changed from the original proposal so that failures, malfunctions, or defects in helicopter structures are required to be reported only if a major repair is necessary.

Many failures, malfunctions, or defects are required to be included in the mechanical reliability report only if they occur during "flight." A note has been added to the rule to explain that in complying with the reporting requirements of section 46.508 a helicopter is to be considered in "flight" from the moment it leaves the surface of the earth on takeoff until it touches down at a place of landing.

Attention is directed to the fact that Draft Release 61-2 proposed 13 specific reporting items while this amendment contains items numbered 1 through 18 with some numbers vacant. This change in reporting items is the result of rearranging and expanding the previous items to adopt them to helicopter operations and to facilitate administrative handling of the reports within the Agency with automatic data processing equipment.

Another change has been made in this amendment which differs from the original proposal. This change provides that the report shall cover a 24-hour period beginning at 0900 hours local time each day and is to be submitted by 0900 hours of the following day rather than the midnight to midnight report period proposed. In this respect, local time is considered to be the time at each air carrier's main maintenance base. This revision does not alter the 24-hour interval made in the proposal, but is incorporated so that the reports can be handled more expeditiously by the Agency under its new automatic data processing system for evaluating individual reports and for distributing mechanical reliability report summaries.

Each air carrier is presently required by paragraph (a) of section 46.509 (Mechanical interruption summary report) to regularly file a summary report of "All interruptions to a scheduled flight, unscheduled changes of helicopters en route, and unscheduled stops and diversions from route which result from known or suspected mechanical difficulties or malfunctions." In response to comment received, paragraph (a) of section 46.509 is being amended to avoid duplicate reporting under paragraph (a) of those malfunctions or mechanical difficulties required to be reported under section 46.508.

The Federal Aviation Agency believes that reports of the failures, malfunctions, and defects required under this amendment, plus additional reports received from the air carriers regarding other occurrences of failures, malfunctions, and defects they consider hazardous, will provide complete, accurate, and uniform reporting. Safety will be served better by this amended reporting procedure as the Agency will be able to disseminate to industry improved reports of hazardous conditions pertaining to helicopter systems, components, and equipment. In addition, through analysis of information developed from reports received, the Agency will be able to detect deteriorating conditions in helicopter systems, components, and equipment, and issue Airworthiness Directives and Alert Notices before such conditions reach hazardous proportions.

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.

Amendment revised section 46.508 and paragraph (a) of section 46.509.

Amendment 46-5

Illumination of Passenger Emergency
Exit Markings

Adopted: Feb. 12, 1962
Effective: Mar. 20, 1962
Published: Feb. 16, 1962
(27 F.R. 1453)

The Federal Aviation Agency published as a notice of proposed rule making (26 F.R. 9241) and circulated as Civil Air Regulations Draft Release No. 61-20 dated September 21, 1961, a proposal to amend Parts 40, 41, 42, and 46 of the Civil Air Regulations to require the illumination of passenger emergency exit markings during all takeoffs and landings, day and night.

In proposing these amendments, the Agency considered several recent accidents and incidents where illumination of the emergency exits during daylight hours may have resulted in a more effective evacuation of the passengers and crew. The Civil Air Regu-

lations as originally adopted did not require daytime use of the emergency exit lighting system. It is now considered that this additional lighting during daylight hours is necessary to provide maximum safety where the evacuation of large numbers of passengers is concerned.

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. In general, all comments received from interested persons as a result of the Agency's notice of proposed rule making were favorable to the proposal.

Amendment revised paragraph (d) of section 46.173.

Amendment 46-6

Miscellaneous Amendment Resulting
From the First Federal Aviation
Agency Airworthiness Review

Adopted: Mar. 27, 1962
Effective: May 3, 1962
Published: Mar. 30, 1962
(27 F.R. 3004)

As a result of the First Federal Aviation Agency Airworthiness Review, the Agency published a notice of proposed rule making affecting several parts of the Civil Air Regulations. This notice was published in the Federal Register (26 F.R. 5130) and circulated as Civil Air Regulations Draft Release No. 61-12 dated June 8, 1961.

There is contained herein an amendment to Part 46 of the Civil Air Regulations which is associated with one of the changes to Part 7 of the Civil Air Regulations resulting from this First FAA Airworthiness Review.

The Part 7 change is the amendment of section 7.604(m) to require an oil temperature warning device to indicate when the oil temperature exceeds a safe value in each main rotor drive gearbox, including those gearboxes essential to rotor phasing, having an oil system independent of the engine oil system.

Part 46 now requires an oil temperature indicator for each transmission, as part of the engine instruments and equipment which are required for all operations. In view of the change to section 7.604(m), the requirement in section 46.172(k) for an oil temperature indicator for each transmission is being amended to require either an oil temperature indicator or an oil temperature warning device for each main rotor drive gearbox, including those gearboxes essential to rotor phasing, having an oil system independent of the engine oil system.

Since this amendment relieves a restriction and imposes no additional burden on any person, notice and public procedure hereon are unnecessary.

Amendment revised paragraph (k) of section 46.172.

Amendment 46-7

Flight Crewmember Qualifications

Adopted: July 16, 1962
Effective: Aug. 21, 1962
Published: July 21, 1962
(27 F.R. 6925)

The Federal Aviation Agency published as a notice of proposed rule making (26 F.R. 8464) and circulated as Civil Air Regulations Draft Release No. 61-18 dated August 31, 1961, a proposal to amend Part 46 of the Civil Air Regulations with respect to the recency of experience required for helicopter pilots and the maintenance of pilot route and heliport qualifications.

Written comments were received from interested groups both endorsing and opposing the proposal. The Air Transport Association was strongly in favor of the proposal and recommended immediate implementation. The Air Line Pilots Association, however, opposed any relaxing of the requirements and firmly recommended more stringent requirements for pilot route qualification when serving in night operations.

Draft Release 61-18 proposed to extend the present 30-day recency of experience provision to 90 days. When Part 46 was originally adopted, the 30-day recency of experience provision was considered essential to safety since helicopter air transportation was a new industry without any appreciable background of experience to draw upon. However, since that time, acceptable operating practices have been developed, training programs have been established, and additional helicopter experience has been gained.

Helicopter operations are primarily short-haul operations requiring a great many takeoffs and landings. These numerous takeoffs and landings provide the pilot with a wide variation of operational experience. They also serve to develop to a very high degree the particular skills and techniques which are necessary to accomplish these maneuvers. It is reasonable to assume, therefore, that these highly developed skills and techniques will not deteriorate to an unsatisfactory degree if not utilized during a time interval as short as 90 days. In addition, this extension of time for pilot recency of experience will bring Part 46 in line with Parts 40, 41, and 42 in that these parts require a minimum of 3 takeoffs and landings in each 90-day period to maintain pilot recency of experience requirements.

The draft release also proposed to relax the existing provisions contained in section 46.301 by requiring that only pilots in command accomplish simulated one-engine-inoperative landings periodically. After due consideration of this proposal and in light of the comments received, it has been determined that an adequate level of safety can only be maintained if all pilots scheduled to serve in helicopter air transportation periodically accomplish simulated one-engine-inoperative landings. Helicopter operations are normally conducted at relatively low altitudes. As a result of this type of operation, the time interval for executing an engine-inoperative landing is very limited. This very limited time interval dictates that both of the pilots in two-pilot crews be proficient in executing this emergency maneuver since the two-pilot-crew concept has developed the acceptable practice of alternating pilot duties other than the function of command. Furthermore, it is imperative that the pilot serving as second in command on helicopters requiring two pilots be qualified to assume command of the helicopter in the event of sudden incapacitation of the pilot in command. As defined in Part 7 of the Civil Air Regulations, Rotorcraft Airworthiness; Transport Categories, "An autorotative landing is any landing of a rotorcraft in which the entire maneuver is accomplished without the application of power to the rotor." In the case of single-engine helicopters, the loss of operation of the engine results in an autorotative landing, but in the case of multiengine helicopters, the loss of operation of one engine does not result in an autorotative landing. However, in both single-engine and multiengine helicopters, the autorotative or one-engine-inoperative landing is an emergency maneuver which requires periodic practice to retain pilot proficiency. In view of the above, it is determined essential to safety to require any pilot scheduled by an air carrier to serve as a pilot in helicopter air transportation to accomplish at least 2 simulated one-engine-inoperative or autorotative landings every 90 days.

Relative to the proposal contained in the draft release to relax the existing requirement for a simulated one-engine-inoperative landing at night, it has been determined that safety would be impaired if such a proposal were adopted. As stated above, helicopter operations are normally conducted at low altitudes. At night, at these low altitudes, it becomes more difficult to distinguish terrain features and judge distance accurately against a background of both stationary and moving surface lights. Furthermore, although some of the heliports are illuminated with lighting specifically designed for heliports, other lights in the vicinity may distort the lighting contrast and produce indefinite silhouettes of the surrounding buildings in close proximity to the helicopter on its final approach and landing. Therefore, unless a pilot has had recent helicopter night landing experience, this distortion of light contrast and lack of clearly defined terrain features may impair his judgment of distance and may affect his depth perception, thus making a one-engine-inoperative or autorotative landing at night most difficult. Accordingly, pilots engaged in helicopter operations at night should be experienced in performing this emergency maneuver at night. In view of the above and in conjunction with comments received, it is determined to be in the interest of safety to continue the present requirement that at least 1 of the 2 one-engine-inoperative or autorotative landings required each 90 days be performed during the hours of darkness if the pilot is scheduled to fly in night helicopter air transportation.

It was determined that the phrase "within the preceding 90 days" contained in section 46.303(c) was unnecessary because of the requirement in section 46.304 that a pilot who has been absent from a route or a heliport on the route for a period in excess of 3 months must comply with all the provisions of section 46.303(c) before acting as pilot in command on that route. Therefore, the phrase is being deleted.

The 30-day requirement presently contained in section 46.304(b) is being changed to 3 months to conform with the original route and heliport qualifications inasmuch as the maintenance of these qualifications should not be more stringent than the original qualifications. The present rule requires that all pilots serving in night operations maintain or reestablish route and heliport qualifications during daylight hours. While it was proposed to relax this requirement so as to be applicable only in the case of passenger-carrying operations, such a requirement is also considered essential to safety for all night operations. Obstructions, and changes occurring to such obstructions, along the route and on the approaches to heliports on the route are equally important to all helicopter pilots serving as pilot in command in all night operations. These obstructions and any changes occurring thereto can best be observed during daylight hours. Accordingly, a periodic daylight flight will insure that each pilot in command serving in night operations is continually familiar with the location and size of such obstructions. In view of the above and in consideration of the comments received, each pilot utilized as pilot in command in night operations will be required to make at least one trip during daylight hours every 3 months as pilot or other member of a flight crew between terminals into which he is scheduled to fly.

Interested persons have been afforded an opportunity to participate in the making of this regulation (26 F.R. 8464), and due consideration has been given to all relevant matter presented.

Amendment revised section 46.301, paragraph (c) of section 46.303, and section 46.304.
