# Federal Aviation Agency

# Washington, D.C.

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## Civil Aeronautics Manual 46

## Scheduled Air Carrier Helicopter Certification and Operation Rules

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Supplement No. 1, CAM 46 dated August 1959 — July 15, 1960

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SUBJECT: Revisions to CAM 46

This supplement is issued to incorporate into CAM 46 Civil Air Regulations Amendments 46–2 and 46–3 issued since the manual was last printed, and new Special Civil Air Regulation No. SR–425B, Provisional Certification and Operation of Aircraft.

New or revised material is enclosed in black brackets on the pages submitted with this supplement. However, because special regulation SR–425B is new in its entirety, it is not so marked.

| *Remove the following pages:* | *Insert the following new pages:* |
|---|---|
| III | III |
| 13 and 14 | 13 through 14–1 |
| | 21 through 31 |

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ATTACHMENTS.

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# Scheduled Air Carrier Helicopter Certification and Operation Rules

## Applicability and Definitions

46.1 *Applicability of this part.* The provisions of this part are applicable to all air carriers holding certificates of public convenience and necessity issued in accordance with Title IV of the Civil Aeronautics Act of 1938, as amended, when utilizing helicopters to engage in scheduled interstate air transportation within the continental limits of the United States.

46.2 *Applicability of Parts 43 and 60 of this subchapter.* The provisions of Parts 43 and 60 of this subchapter shall be applicable to all air carrier operations conducted under the provisions of this part unless otherwise specified in this part.

46.5 *Definitions.* As used in this part, terms are defined as follows:

*Administrator.* The Administrator is the Administrator of the Federal Aviation Agency.

*Air Carrier.* An air carrier is any citizen of the United States who undertakes directly, or by lease or by other arrangement, the carriage by helicopter of persons or property as a common carrier for compensasation or hire, or the carriage of mail by helicopter.

*Airframe.* Airframe means any and all kinds of fuselages, booms, nacelles, cowlings, fairings, empennages, fixed airfoil surfaces, and landing gear, and all parts, accessories, or controls, of whatever description, appertaining thereto, but not including powerplants, rotor heads, power-transmitting components, and rotating airfoil surfaces.

*Appliances.* Appliances are instruments, equipment, apparatus, parts, appurtenances, or accessories of whatever description, which are used, or are capable of being or intended to be used, in the navigation, operation, or control of helicopters in flight (including communication equipment, electronic devices, and any other mechanism or mechanisms installed in or attached to helicopters during flight, but excluding parachutes), and which are not a part or parts of airframes, powerplants, rotor heads, power-transmitting components, or rotating airfoil surfaces.

*Approved.* Approved, when used alone or as modifying terms such as means, method, action, equipment, etc., means approved by the Administrator.

*Authorized representative of the Administrator.* An authorized representative of the Administrator is any employee of the Federal Aviation Agency, or any private person, authorized by the Administrator to perform particular duties of the Administrator under the provisions of this part.

*Check airman.* A check airman is an airman designated by the air carrier and approved by the Administrator to examine other airmen to determine their proficiency with respect to procedures and technique and their competence to perform their respective airman duties.

*Crew member.* A crew member is any individual assigned by an air carrier for the performance of duty on a helicopter in flight.

*Duty aloft.* Duty aloft includes the entire period during which an individual is assigned as a member of a helicopter crew during flight time.

*En route.* En route means the entire flight from the point of origination to the point of termination, including intermediate stops.

*Flight crew member.* A flight crew member is a crew member assigned to flight deck duty on a helicopter.

*Flight release.* A flight release is an authorization issued by an air carrier specify-

ing the conditions for the origination or continuance of a particular flight.

*Flight time.* Flight time is the time from the moment the helicopter first moves under its own power for the purpose of flight until it comes to rest at the next point of landing (block-to-block time).

*Helicopter.* A helicopter is a rotorcraft which depends principally for its support and motion in the air upon the lift generated by one or more power-driven rotors, rotating on substantially vertical axes.

*Heliport.* A heliport is an area of land, water, or any structure approved by the Administrator for the landing and take-off of helicopters.

*HIR.* HIR is the symbol used to designate helicopter instrument flight rules.

*HVR.* HVR is the symbol used to designate helicopter visual flight rules.

*Interstate air transportation.* Interstate air transportation is the carriage by helicopter of persons or property as a common carrier for compensation or hire or the carriage of mail by helicopter, in commerce between a place in any state of the United States, or the District of Columbia, and a place in any other State of the United States, or the District of Columbia; or between places in the same State of the United States, or the District of Columbia; whether such commerce moves wholly by helicopter or partly by helicopter and partly by other forms of transportation.

*Maximum certificated take-off weight.* Maximum certificated take-off weight is the maximum take-off weight authorized by the terms of the helicopter airworthiness certificate.

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

*Night.* Night is the time between the ending of evening civil twilight and the beginning of morning civil twilight as published in the American Air Almanac converted to local time for the locality concerned.

*Note:* The American Air Almanac containing the ending of evening twilight and the beginning of morning twilight tables may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D.C. Information is also available concerning such tables in the offices of the Federal Aviation Agency or the United States Weather Bureau.

*Operational control.* Operational control is the exercise of authority over initiation, continuation, diversion, or termination of a flight.

*Operations specifications.* Operations specifications are rules of particular applicability issued by the Administrator and are not part of the air carrier operating certificate.

*Pilot in command.* The pilot in command is the pilot designated by the air carrier as the pilot responsible for the operation and safety of the helicopter during the time defined as flight time.

*Pilotage.* Pilotage is navigation by means of visual reference to landmarks.

*Provisional heliport.* A provisional heliport is a heliport approved for use by an air carrier for the purpose of providing service to a community when the regular heliport serving that community is not available.

*Rating.* A rating is an authorization issued with a certificate, and forming a part thereof, delineating special conditions, privileges, or limitations pertaining to such certificate.

*Refueling heliport.* A refueling heliport is a heliport approved as a heliport to which flights may be dispatched only for refueling.

*Regular heliport.* A regular heliport is a heliport approved as a regular terminal or intermediate stop on an authorized route.

*Rotor.* A rotor is a system of rotating airfoils.

(1) *Main rotor(s).* The main rotor(s) is the main system of rotating airfoils providing sustentation for the helicopter.

(2) *Auxiliary rotor.* An auxiliary rotor is one which serves either to counteract the effect of the main rotor torque on the helicopter, or to maneuver the helicopter about one or more of its three principal axes.

*Route.* A route is an established way or course for helicopters which has been designated by the Administrator.

*Route segment.* A route segment is a portion of a route each terminus of which is identified by:

(1) A continental or insular geographic location, or

(2) A point at which a definite radio fix can be established.

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

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

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

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

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

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

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

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

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

## Certification Rules and Operations Specifications Requirements

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

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

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

46.13 *Issuance of certificate.*

(a) An air carrier operating certificate shall be issued by the Administrator to an applicant having a certificate of public convenience and necessity issued by the Civil Aeronautics Board when the Administrator finds, after investigation, that such person is properly and adequately equipped and able to conduct a safe operation in accordance with the requirements of this part and with the operations specifications authorized in this part.

(b) Whenever, upon investigation, the Administrator finds that the general standards of safety required for air carrier operations require or permit a deviation from any specific requirement for a particular operation or class of operations he may issue operations specifications prescribing requirements which deviate from the requirements of this part.

46.14 *Amendment of certificate.*

(a) The Administrator shall, after notice and opportunity for hearing to the carrier concerned, amend an air carrier operating certificate when he finds that such amendment is reasonably required in the interest of safety.

(b) Upon application by an air carrier the Administrator shall amend an air carrier operating certificate when he finds that the general standards of safety permit such an amendment.

46.15 *Display of certificate.* The air carrier operating certificate shall be available at the principal operations office of an air carrier for inspection by any authorized representative of the Board or the Administrator.

46.16 *Duration of certificate.* An air carrier operating certificate shall remain in effect until termination of the certificate of public convenience and necessity or other economic authorization issued by the Board held by the air carrier, or until surrendered, suspended, revoked, or otherwise terminated by order of the Administrator. After suspension or revocation it shall be returned to the Administrator.

46.17 *Transferability of certificate.* An air carrier operating certificate is not transferable, except with the written consent of the Administrator.

46.18 *Operations specifications required.*

(a) On and after the effective date of this part all helicopter air carrier operations specifications currently in force relating to interstate air transportation shall cease to be a part of any air carrier operating certificate and shall be deemed to be operations specifications issued under this part. Thereafter new or amended specifications shall be issued by the Administrator for operations subject to this part in a form and manner prescribed by him and in accordance with the provisions of this part.

(b) No person subject to the provisions of this part shall operate as an air carrier without, or in violation of, operations specifications issued by the Administrator.

46.19 *Contents of specifications.* The operations specifications shall contain the following:

(a) Operations authorized;

(b) A current list of all helicopters authorized for use;

(c) En route authorizations and limitations;

(d) Heliport authorizations and limitations;

(e) Time limitation for components retirement, overhauls, inspections, replacement, and checks of airframes, rotors, powerplants, and appliances, or standards by which such time limitations shall be determined;

(f) Procedures used to maintain control of weight and balance of helicopters;

(g) Specific pages of the carrier's operations manual when such pages have been specifically designated and approved by the Administrator; and

(h) Such additional items as the Administrator determines, under the enabling provisions of this part, are necessary to cover a particular situation.

46.20 *Utilization of operations specifications.* The air carrier shall keep its personnel informed with respect to the contents of the operations specifications and all amendments thereto applicable to the individual's duties and responsibilities. A set of specifications shall be maintained by the air carrier as a separate and complete document. Pertinent excerpts from the specifications or references thereto shall be inserted in the manual issued by the air carrier.

46.21 *Amendment of operations specifications.* Any operations specification may be amended by the Administrator if he finds that safety in air transportation so requires or permits. Except in the case of an emergency requiring immediate action in respect to safety in air transportation or upon consent of the air carrier concerned, no amendment shall become effective prior to thirty days after the date the air carrier has been notified of such amendment.

46.22 *Inspection authority.* An authorized representative of the Administrator shall be permitted at any time and place to make inspections or examinations to determine an air carrier's compliance with the requirements of the Civil Aeronautics Act of 1938, as amended, the regulations in this subchapter, the provisions of the air carrier's

operating certificate, and the operations specifications.

46.23 *Operations and maintenance base and office.* Each air carrier shall give written notice to the Administrator of his principal business office, his principal operations base, and his principal maintenance base. Thereafter, prior to any change in any such office or base, he shall give written notice to the Administrator.

## Requirements for Services and Facilities

46.30 *Route requirements; demonstration of competence.* The air carrier shall show that it is competent to conduct scheduled operations over any route or route segment between any regular, provisional, or refueling heliport and that the facilities and services available are adequate for the type of operation proposed. The Administrator shall not require actual flight over a route or route segment, if the air carrier shows that such flight is not essential to safety.

46.31 *Width of routes.* A route or route segment shall have a width designated by the Administrator consistent with terrain, available navigational aids, traffic density, and air traffic control procedures.

46.33 *Heliports.* The air carrier shall show that each route has sufficient heliports found by the Administrator to be properly equipped and adequate for the type of operations to be conducted. Consideration shall be given to items such as size, surface, obstructions, facilities, public protection, lighting, navigational and communications aids, and traffic control.

46.34 *Communications facilities.* The air carrier shall show that a two-way air/ground radio communication system is available at such points as will insure reliable and rapid communications under normal operating conditions either direct or via approved point-to-point circuits for the following purposes:

(a) Communications between the helicopter and the appropriate air carrier operational control office, at the minimum flight altitudes specified in the operations specifications. Such systems shall be independent of systems operated by the Federal Government;

(b) Communications between the helicopter and the appropriate air traffic control unit, in which case the Administrator may permit the use of communications systems operated by the Federal Government; and

(c) When the Administrator finds that compliance with the requirements of paragraph (a) of this section is not practicable because of terrain conditions, he may authorize an exception to such requirements over specified segments of the route.

46.35 *Weather reporting facilities.* The air carrier shall show that sufficient weather reporting services are available to insure such weather reports and forecasts necessary for the operation. Weather reports used to control operations shall be those prepared and released by the United States Weather Bureau, a source approved by the Weather Bureau, or by in-flight pilot reports. Forecasts used to control flight movements shall be prepared from such weather reports.

46.37 *Servicing and maintenance facilities.* The air carrier shall show that competent personnel and adequate facilities and equipment are available for servicing helicopters.

## Manual Requirements

46.50 *Preparation of manual.* The air carrier shall prepare and keep current a manual for the use and guidance of flight and ground operations personnel in the conduct of its operations.

46.51 *Contents of manual.*

(a) The manual shall contain instructions, information, and data necessary for the personnel concerned to carry out their duties and responsibilities with a high degree of safety. It shall be in a form to facilitate easy revision, and each page shall bear the date of the last revision thereof. The contents of such manual shall not be contrary to the provisions of any Federal regulations, operations specifications, or the operating certificate. The manual may be in two or more separate parts (e.g., flight operations, ground operations, maintenance, communi-

cations, etc.) to facilitate use by the personnel concerned, but each part shall contain so much of the information listed below as is appropriate for each group of personnel:

(1) General policies;

(2) Duties and responsibilities of each crew member and appropriate members of the ground organization;

(3) Reference to appropriate regulations in this subchapter and Civil Aeronautics Manuals;

(4) Operational flight control;

(5) En route flight, navigational, and communication procedures, including procedures for the initiation or continuance of flight, if any item of equipment required for the particular type of operation becomes inoperative or unserviceable en route;

(6) Appropriate information from the en route operations specifications, including for each approved route the types of helicopters authorized, their crew complement, the type of operation (i.e., HVR, day, night) and other pertinent information;

(7) Appropriate information from the heliport operations specifications, including for each heliport its location, its designation (i.e., regular, provisional, etc.), types of helicopters authorized, landing and take-off minimums, an appropriate diagram for each heliport showing access and egress routes, restricted areas, prominent obstructions, usable dimensions, and such other pertinent items as may assist the pilot;

(8) Take-off, en route, and landing weight limitations;

(9) Procedures for familiarizing passengers with the use of emergency equipment during flight;

(10) Emergency procedures and equipment;

(11) Procedures for determining the usability of landing and take-off areas and for dissemination of pertinent information to operations personnel;

(12) Procedures for operation during periods of icing, hail, thunderstorms, turbulence, or any potentially hazardous meteorological conditions;

(13) Airman training programs, including appropriate ground, flight, and emergency phases;

(14) Instructions and procedures for maintenance, repair, overhaul, and servicing;

(15) Time limitations for components' retirement, overhaul, inspections, replacement, and checks of airframes, rotors, powerplants, and appliances, or standards by which such time limitations shall be determined;

(16) Procedures for refueling helicopters, elimination of fuel contamination, protection from fire including electrostatic protection, and the supervision and protection of passengers during refueling;

(17) Inspections for airworthiness, including instructions covering procedures, standards, responsibilities, and authority of the inspection personnel;

(18) Methods and procedures for maintaining the helicopter weight and center of gravity within approved limits;

(19) Pilot route and heliport qualification procedures;

(20) Accident notification procedures;

(21) Pertinent data on helicopter performance taken from approved flight manual for all helicopters utilized; and

(22) Other data or instructions related to safety.

(b) At least one complete master copy of the manual containing all parts thereof shall be retained at the appropriate operations base of the air carrier.

46.52 *Distribution of manual.*

(a) Copies of the entire manual, or appropriate portions thereof, together with revisions thereto shall be furnished to the following:

(1) Appropriate ground operations and maintenance personnel of the air carrier;

(2) Crew members; and

(3) Authorized representatives of the Administrator assigned to the air carrier to act as FAA Flight Operations and Airworthiness Inspectors.

(b) All copies of the manual shall be kept up to date.

## Helicopter Requirements

46.60 *General.* Helicopters shall be identified, certificated, and equipped in accordance with the applicable airworthiness requirements of the regulations in this subchapter. No air carrier shall operate any helicopter in scheduled operation unless such helicopter meets the requirements of this part and is in an airworthy condition.

46.63 *Proving tests.*

(a) A type of helicopter not previously proved for use in scheduled operation shall have demonstrated its reliability in at least 100 hours of proving tests, in addition to the helicopter certification tests, accomplished under the supervision of an authorized representative of the Administrator. As part of the 100-hour total at least 50 hours shall be flown over authorized routes and at least 10 hours shall be flown at night if night operations are authorized.

(b) A type of helicopter which has been previously proved in commercial service or extensive military service shall be tested for at least 50 hours, of which at least 25 hours shall be flown over authorized routes, unless deviations are specifically authorized by the Administrator on the ground that the special circumstances of a particular case make a literal observance of the requirements of this paragraph unnecessary for safety, when the helicopter:

(1) Is materially altered in design, or

(2) Is to be used by an air carrier who has not previously proved such a type.

(c) During proving tests only those persons required to make the tests and those designated by the Board or the Administrator shall be carried. Mail, express, and other cargo may be carried when approved by the Administrator.

## Helicopter Operating Limitations

46.70 *Operating limitations.* Helicopters shall be operated in accordance with such operating limitations as the Administrator may prescribe in the interest of safety, taking into account the performance of the helicopter, the areas traversed, heliports used, engine failure in flight, and temperature operating correction factors as outlined in the helicopter flight manual.

46.71 *Operations of helicopters other than Transport Category A.* For operations with helicopters certificated under the provisions of Part 6 of this subchapter or the Transport Category B provisions of Part 7 of this subchapter, the air carrier shall show that adequate areas are available for a safe autorotative landing from any point along the route to be flown, and that such areas are readily identifiable in both day and night operations.

## Special Airworthiness Requirements

46.110 *Fire prevention.* All helicopters used in passenger service for which application for certification was made prior to May 16, 1953, shall comply with the fire prevention provisions of Part 6 of this subchapter, effective May 16, 1953.

46.153 *Carriage of cargo in passenger compartments.* When operating conditions require the carriage of cargo which cannot be loaded in approved cargo racks, bins, or compartments which are separate from passenger compartments, such cargo may be carried in a passenger compartment if the following requirements are complied with:

(a) It shall be packaged or covered in a manner to avoid possible injury to passengers.

(b) It shall be properly secured in the helicopter by means of safety belts or other tie-downs possessing sufficient strength to eliminate possibility of shifting under all normally anticipated flight and ground conditions.

(c) It shall not be carried directly above seated passengers.

(d) It shall not impose any loads on seats or on the floor structure which exceed the designed loads for those components.

(e) It shall not be placed in any position which restricts the access to or use of any required emergency or regular exit or the use of the aisle between the crew and the passenger compartments.

## Instruments and Equipment for all Operations

46.170 *Helicopter instruments and equipment for all operations.*

(a) Instruments and equipment required by sections 46.171 through 46.231 shall be approved and shall be installed in accordance with the provisions of the airworthiness requirements applicable to the instruments or equipment concerned.

(b) The following instruments and equipment shall be in operable condition prior to take-off, except as provided in section 46.391(b) for continuance of flight with equipment inoperative:

(1) Instruments and equipment required to comply with airworthiness requirements under which the helicopter is type certificated and as required by the provisions of section 46.110, and

(2) Instruments and equipment specified in sections 46.171 through 46.178 for all operations, and the instruments and equipment specified in sections 46.200 through 46.231 for the type of operation indicated, wherever these items are not already provided in accordance with subparagraph (1) of this paragraph.

46.171 *Flight and navigational equipment for all operations.* The following flight and navigational instruments and equipment are required for all operations:

(a) An air-speed indicating system with heated pitot tube or equivalent means for preventing malfunctioning due to icing;

(b) Sensitive altimeter;

(c) Clock (sweep-second);

(d) Free-air temperature indicator; and

(e) Magnetic compass.

46.172 *Engine instruments and equipment for all operations.* The following engine instruments and equipment are required for all operations:

(a) Tachometer for the main rotor, or for each main rotor the speed of which may vary appreciably with respect to another main rotor;

(b) Tachometer for each engine (these tachometers may be combined in a single instrument with that required by paragraph (a) of this section, except that such an instrument shall indicate rotor rpm during autorotation);

(c) Carburetor air temperature indicator for each engine;

(d) Cylinder head temperature indicator for each air-cooled engine;

(e) Fuel pressure indicator and warning light indicator for each engine;

(f) Means for indicating fuel quantity in each fuel tank, and for helicopters with more than one independent fuel tank, a warning device to indicate when the fuel in any indepedent fuel tank becomes low;

(g) Manifold pressure indicator for each engine;

(h) Oil pressure indicator for each engine;

(i) Oil pressure warning light for each engine;

(j) Oil-in temperature indicator for each engine;

[(k) Oil temperature indicator or 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;

[(Amendment 46-6, published in 27 F.R. 3004, March 30, 1962, effective May 3, 1962.)]

(l) Oil pressure indicator and warning light for each transmission using a separate oil pump;

(m) Carburetor heating or de-icing equipment for each engine; and

(n) If equipped with rotor brake, means shall be provided to indicate full or partial engagement.

46.173 *Emergency equipment for all operations.*

(a) *General.* The emergency equipment specified in paragraphs (b), (c), and (d) of this section is required for all operations. Such equipment shall be readily accessible to the crew, and the method of operation shall be plainly indicated. When such equipment is carried in compartments or containers, the compartments or containers shall be so marked as to be readily identifiable.

(b) *Hand fire extinguishers for crew, pas-*

*senger, and cargo compartments.* Hand fire extinguishers of an approved type shall be provided for use in crew, passenger, and cargo compartments which are accessible in flight in accordance with the following requirements:

(1) The type and quantity of extinguishing agent shall be suitable for the type of fires likely to occur in the compartment where the extinguisher is intended to be used.

(2) At least one hand fire extinguisher shall be provided and conveniently located on the flight deck for use by the flight crew.

(3) On helicopters accommodating more than six passengers, at least one fire extinguisher shall be conveniently located in the passenger compartment.

(c) *First-aid equipment.* First-aid equipment suitable for treatment of injuries likely to occur in flight or in minor accidents shall be provided in a quantity appropriate to the number of passengers and crew accommodated in the helicopter.

[(d) *Interior emergency exit markings.* All emergency exits, their means of access, and their means of opening shall be marked conspicuously. In all passenger-carrying helicopters, a source or sources of light with an energy supply independent of the main lighting system shall be installed to illuminate all passenger emergency exit markings. Such lights shall be designed to function automatically in a crash landing and to continue to function thereafter, and shall be operable manually, or shall be designed only for manual operation and also to continue to function following a crash landing. When such lights require arming of the system to function automatically, the system shall be armed prior to each takeoff and landing. When such lights require manual operation to function, they shall be turned on prior to each takeoff and landing. The identity and location of emergency exits shall be recognizable from a distance equal to the width of the cabin. The location of the emergency exit operating handle and the instructions for opening shall be marked on or adjacent to the emergency exit and shall be readable from a distance of 30 inches by a person with normal eyesight.

[(Amendment 46-5, published in 27 F.R. 1453, Feb. 16, 1962, effective Mar. 20, 1962.)]

46.174 *Seats and safety belts for all occupants.* A seat and an individual safety belt shall be provided for each person. In the case of children between the ages of 2 and 12, one safety belt shall suffice for each two children in a single seat provided strength requirements of the seat and the safety belt are not exceeded.

46.175 *Miscellaneous equipment for all operations.* All helicopters shall have installed the following equipment:

(a) Windshield wiper or equivalent for each pilot station;

(b) An alternate source of energy capable of carrying the necessary load for all instruments required by section 42.200 of this subchapter which require a power source; and

(c) Means for indicating the adequacy of the power being supplied to required flight instruments.

46.176 *Cockpit check procedure.* The air carrier shall provide for each type of helicopter a cockpit check procedure. This procedure shall include all items necessary for flight crew members to check for safety prior to starting engine(s), prior to taking off, prior to landing, and in engine emergencies. It shall be so designed as to obviate the necessity for a flight crew member to rely upon his memory for items to be checked and shall be readily usable in the cockpit of each helicopter.

46.177 *Passenger information for all operations.* All helicopters with separate passenger and crew compartments shall be equipped with signs visible to passengers and cabin attendants to notify such persons when smoking is prohibited and when safety belts should be fastened. These signs shall be capable of on-off operation by the crew. The "No smoking" sign will be left on unless a cabin attendant is carried on flight in passenger compartment. In single-engine helicopters, seat belts must be fastened at all times in flight.

46.178 *Exterior exit and evacuation markings for passenger operations.* Exterior surfaces of the helicopter shall be marked to identify clearly all required emergency exits. When such exits are operable from the outside, markings shall consist of or include information indicating the method of opening.

## Instruments and Equipment for Special Operations

46.200 *Instruments and equipment for operations at night.* Each helicopter operated at night shall be equipped with the following instruments and equipment in addition to those required by sections 46.171 through 46.178:

(a) Position lights;

(b) Two landing lights at least one of which is controllable to illuminate the area forward of and below the helicopter;

(c) Instrument lights providing sufficient illumination to make all instruments, switches, etc., easily readable, so installed that their direct rays are shielded from the flight crew members' eyes and that no objectionable reflections are visible to them. A means of controlling the intensity of illumination shall be provided unless it is shown that nondimming instrument lights are satisfactory;

(d) One anti-collision light;

(e) Generator of adequate capacity;

(f) Gyroscopic bank and pitch indicator (artificial horizon);

(g) Gyroscopic direction indicator (directional gyro);

(h) Gyroscopic rate-of-turn indicator with bank indicator; and

(i) A vertical speed indicator (rate-of-climb indicator).

46.206 *Equipment for single-engine overwater operations.* The following equipment shall be required for all operations conducted beyond autorotative gliding distance from the nearest shoreline:

(a) Helicopter flotation devices, and life preserver or other adequate individual flotation device for each occupant of the helicopter; and

(b) Such other equipment as the Administrator finds necessary in the interest of safety for the particular operation.

## Radio Equipment

46.230 *Radio Equipment.* Each helicopter used in scheduled air transportation shall be equipped with radio equipment specified for the type of operation in which it is engaged. All such equipment shall be of an approved type.

46.231 *Radio equipment for operations over routes navigated by pilotage.* For operations conducted over routes on which navigation can be accomplished by pilotage, each helicopter shall be equipped with such radio equipment as is necessary under normal operating conditions to fulfill the following functions:

(a) Communicate with at least one appropriate ground station (as specified in 46.34) in the vicinity and other helicopters operated by the air carrier;

(b) Communicate with airport traffic control towers from any point in the control zone within which flights are intended; and

(c) Receive meteorological information at the minimum en route altitude specified in the operations specifications of the air carrier. Either of the means required for compliance with paragraphs (a) and (b) of this section may be used to comply with this paragraph.

## Maintenance and Inspection Requirements

46.240 *Responsibility for maintenance.* Irrespective of whether the air carrier has made arrangements with any other person for the performance of maintenance and inspection functions, each air carrier shall have the primary responsibility for the airworthiness of its helicopters and required equipment.

46.241 *Maintenance and inspection requirements.*

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

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

46.242 *Maintenance and inspection training program.* The air carrier, or the person with whom arrangements have been made for



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the performance of maintenance and inspection functions, shall establish and maintain a training program to insure that all maintenance and inspection personnel charged with determining the adequacy of work performed are fully informed with respect to all procedures and techniques and with new equipment introduced into service, and are competent to perform their duties.

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

## Airman and Crew Member Requirements

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

46.261 *Composition of flight crew.*

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

(b) Where the air carrier is authorized to operate under instrument conditions or operates helicopters of more than 12,500 pounds maximum certificated weight, the minimum pilot crew shall be 2 pilots.

46.265 *Flight attendant.* At least one flight attendant shall be provided by the air carrier on all flights carrying passengers in helicopters of 20-passenger capacity or more.

## Training Program

46.280 *Training requirements*

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

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

(c) The training program for each flight crew member shall consist of appropriate ground and flight training including proper flight crew coordination. Procedures for each flight crew function shall be standardized to the extent that each flight crew member will know the functions for which he is responsible and the relation of those functions to those of other flight crew members. The initial program shall include at least the appropriate requirements specified in sections 46.281 through 46.286.

(d) The crew member emergency procedures training program shall include at least the requirements specified in section 46.286.

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

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

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

(b) Operational control procedures and appropriate contents of the manuals;

(c) The duties and responsibilities of crew members;

(d) The type of helicopter to be flown, including a study of the helicopter, powerplants, all major components and systems, performance limitations, standard and emergency operating procedures, and appropriate

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contents of the approved Helicopter Flight Manual;

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

(f) Navigation and use of appropriate aids to navigation;

(g) Airport, heliport, 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.

46.282 *Initial pilot flight training.* Flight training for each pilot shall include at least take-offs and landings and normal and emergency flight maneuvers including approaches and landings with simulated one engine inoperative in each type of helicopter to be flown by him in scheduled operations. When night operations are authorized, such training shall include night take-offs and landings.

46.286 *Initial crew member emergency training.* The training in emergency procedures shall be designed to give each crew member appropriate individual instruction in all emergency procedures. Such training shall include at least the procedures to be followed in the event of the failure of an engine or other helicopter component or system, fire in the air or on the ground, ditching, evacuation, the location and operation of all emergency equipment, and maximum and minimum engine and rotor rpm.

46.288 *Training program; operations personnel.* The air carrier shall establish and maintain a training program sufficient to insure that operations personnel who perform duties involving operational control are adequately trained to perform such duties. The air carrier shall not assign an individual to perform duties involving operational control until he has satisfactorily passed an examination concerning such duties and responsibilities.

46.289 *Recurrent training.*

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

(b) Each air carrier shall, at intervals established as part of the training program, but not to exceed 12 months, check the competence of each crew member and personnel engaged in operational control with respect to procedures, techniques, and information essential to the satisfactory performance of his duties. Where the check of the pilot in command requires actual flight, such check shall be considered to have been met by the checks accomplished in accordance with section 46.302.

(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. In the case of pilots other than pilots in command, a pilot in command may make such certification.

## Flight Crew Member Qualifications

46.300 *Qualification requirements.*

(a) No air carrier shall utilize any flight crew member, nor shall any such airman perform the duties authorized by his airman certificate, unless he satisfactorily meets the appropriate requirements of section 46.280 or section 46.289, and sections 46.301 through 46.304. All pilots serving as pilots in command shall hold valid airline transport pilot certificates with appropriate helicopter ratings. All other pilots shall hold at least commerical pilot certificates with helicopter ratings.

(b) Check airmen shall certify as to the proficiency of the pilot in command being examined, as required by sections 46.302 and 46.303, and such certification shall become part of the airman's records.

[*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 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 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

and regulations, local airport traffic control rules, and of all known hazards to flight, including icing and other potentially hazardous meteorological conditions and irregularities of ground and navigational facilities.

46.353 *Operations schedules.* In establishing flight operations schedules, each air carrier shall allow sufficient time for the proper servicing of helicopters with fuel and oil at intermediate stops, and it shall consider the prevailing winds along the particular route and the cruising speed of the type of helicopter to be flown which shall not exceed the specified cruising output of the helicopter engines.

46.354 *Flight crew members at controls.* All required flight crew members when on flight deck duty shall remain at their respective stations while the helicopter is taking off or landing, and while en route except when the absence of one such flight crew member is necessary for the performance of his duties in connection with the operation of the helicopter. All flight crew members shall keep their seat belts fastened when at their respective stations.

46.355 *Manipulation of controls.* No person other than a qualified pilot of the air carrier shall manipulate the flight controls during flight, except that any one of the following persons may, with the permission of the pilot in command, manipulate such controls:

(a) Authorized pilot safety representatives of the Administrator or the Board who are qualified on the helicopter and are engaged in checking flight operations, or

(b) Pilot personnel of another air carrier properly qualified on the helicopter and authorized by the operating carrier.

46.356 *Admission to flight deck.* No persons, other than crew members, shall be admitted to the flight deck of a helicopter except those authorized in paragraphs (a) and (b) of this section. For the purposes of this section, the Administrator shall determine what constitutes the flight deck.

(a) FAA Flight Operations and Airworthiness Inspectors and authorized representatives of the Board while in the performance of official duties shall be admitted to the flight deck.

*Note:* Nothing contained in this paragraph shall be construed as limiting the emergency authority of the pilot in command to exclude any person from the flight deck in the interest of safety.

(b) The persons listed below may be admitted to the flight deck when authorized by the pilot in command:

(1) An employee of the Federal Government or of an air carrier or other aeronautical enterprise whose duties are such that his presence on the flight deck is necessary or advantageous to the conduct of safe air carrier operations, or

*Note:* Federal employees who deal responsibly with matters relating to air carrier safety and such air carrier employees as pilots, meteorologists, communication operators, and mechanics whose efficiency would be increased by familiarity with flight conditions may be considered eligible under this requirement. Employes of traffic, sales, and other air carrier departments not directly related to flight operations cannot be considered eligible unless authorized under subparagraph (2) of this paragraph.

(2) Any other person specifically authorized by the air carrier management and the Administrator.

(c) All persons admitted to the flight deck shall have seats available for their use in the passenger compartment except:

(1) FAA Flight Operations and Airworthiness Inspectors or other authorized representatives of the Federal Aviation Agency or the Civil Aeronautics Board engaged in checking flight operations;

(2) Air traffic controllers who have been authorized by the Administrator to observe ATC procedures;

(3) Certificated airmen of the air carrier whose duties with the carrier require an airman certificate;

(4) Certificated airmen of another air carrier whose duties with such carrier require an airman certificate and who have been authorized by the air carrier concerned to make specific trips over the route;

(5) Employees of the air carrier, whose functions are directly related to the conduct or planning of flight operations or the in-flight monitoring of helicopter equipment or

operating procedures, but only when their presence in the cockpit is required in the furtherance of such functions and when specifically authorized in writing by a responsible supervisor in the operations department of the air carrier, who is listed in the Operations Manual as having such authority; and

(6) Technical representatives of the manufacturer of the helicopter or its components whose functions are directly related to the in-flight monitoring of helicopter equipment or operating procedures, but only when their presence in the cockpit is required in the furtherance of such functions and only when specifically authorized in writing by the Administrator and by a responsible supervisor in the operations department of the air carrier, who is listed in the Operations Manual as having such authority.

46.357 *Use of cockpit check procedure.* The cockpit check procedure shall be used by the flight crew for each procedure as set forth in section 46.176.

46.358 *Personal flying equipment.* The pilot in command shall insure that the following equipment is aboard the helicopter for each flight:

(a) Appropriate aeronautical charts containing adequate navigational information, and

(b) A flashlight in good working order in the possession of each crew member during night operations.

46.359 *Restriction or suspension of operation.* When conditions exist which constitute a hazard to the conduct of safe air carrier operations, including heliport conditions, the air carrier shall restrict or suspend operations until such hazardous conditions are corrected.

46.360 *Emergency decisions; pilot in command.*

(a) In emergency situations which require immediate decision and action, the pilot in command may follow any course of action which he considers necessary under the circumstances. In such instances the pilot in command, to the extent required in the interest of safety, may deviate from prescribed operations procedures and methods, weather minimums, and the regulations of this subchapter.

(b) When emergency authority is exercised by the pilot in command, the air carrier shall be kept fully informed regarding the progress of the flight, and within 10 days after the completion of the particular flight a written report of any deviation shall be submitted by the individual declaring the emergency to the Administrator through the air carrier's operations manager.

(c) No pilot in command shall deviate from an authorized route, except when operating in accordance with traffic control instructions issued by a control tower or control center or when circumstances render such deviation necessary in the interest of safety. In the latter case any deviation of more than 10 miles from the authorized route shall be explained by the pilot in a written report to the Administrator within 10 days of such deviation.

46.361 *Reporting potentially hazardous meteorological conditions and irregularities of ground and navigational facilities.* When any meteorological condition or irregularity of ground or navigational facilities is encountered in flight, the knowledge of which the pilot in command considers essential to the safety of other flights, he shall notify an appropriate ground radio station as soon as practicable. Such information shall thereupon be relayed by that station to the appropriate governmental agency.

46.362 *Reporting mechanical irregularities.* The pilot in command shall enter or cause to be entered in the maintenance log of the helicopter all mechanical irregularities encountered during flight. He shall, prior to each flight, inspect the log to ascertain the status of any irregularities entered in the log at the end of the last preceding flight.

46.364 *Weather minimums.* No flight shall be initiated, continued en route, or landed at destination unless it is conducted in accordance with the weather requirements prescribed in the operations specifications.

## Flight Release Rules

46.381 *Flight release.* No flight shall be initiated without the pilot in command executing a flight release form setting forth the conditions under which the flight will be conducted and certifying that the flight will be conducted in accordance with the regulations in this subchapter and the air carrier's operations specifications. When such flights originate at locations other than the normal operating base, such flight release forms may be executed orally to the operation control center, in which case such shall be made a matter of record. Flights which have remained at an intermediate heliport in excess of one hour shall require a new flight release.

46.382 *Familiarity with weather conditions.* No pilot in command shall execute a flight release unless he is thoroughly familiar with existing and anticipated weather conditions along the route to be flown.

46.383 *Facilities and services.* The operational control center shall furnish to the pilot in command all available current reports or information pertaining to irregularities of navigational facilities and heliport conditions which may affect the safety of the flight. It shall also furnish the pilot, while en route, any additional available information concerning meteorological conditions and irregularities of facilities and services which may affect the safety of the flight.

46.384 *Helicopter equipment required for flight release.* All helicopters released shall be airworthy and shall be equipped in accordance with the provisions of section 46.170.

46.385 *Communications facilities required for flight release.* No helicopter shall be released for flight over any route or route segment unless the communications facilities required by section 46.34 are in satisfactory operating condition.

46.386 *Flight release under HVR.* Helicopters shall be released for operation under HVR only if the appropriate weather reports and forecasts or a combination thereof, indicate that the ceilings and visibilities along the route to be flown are, and will remain, at or above the minimums required for flight under HVR until the flight arrives at the heliport or heliports of intended landing specified in the flight release.

46.387 *HIR operations.* When an air carrier makes application for authorization to conduct instrument operations, and the Administrator, upon investigation, finds that the helicopter is properly certificated for instrument flight and its pilots are capable of instrument flight in helicopters, he may authorize such instrument operation. When such authorization is granted, complete operations procedures for such authorization shall be specified in the air carrier operations specifications.

46.388 *Visual ground reference requirements.* Except when authorized under section 46.387, no helicopter shall be operated unless meteorological conditions permit sufficient visual ground reference to allow proper control of the helicopter. At night, ample ground reference lights shall be available for that purpose.

46.391 *Continuance of flight; flight hazards.*

(a) No helicopter shall be continued in flight toward any heliport to which it has been released when, in the opinion of the pilot in command or the air carrier, the flight cannot be completed with safety, unless in the opinion of the pilot in command there is no safer procedure. In the latter event, continuation shall constitute an emergency situation as set forth in section 46.360.

(b) If any item of equipment required pursuant to the regulations of this subchapter for the particular operation being conducted becomes unserviceable en route, the pilot in command shall comply with the procedures specified in the manual for such occurrence: *Provided,* That the Administrator may authorize the incorporation in the air carrier manual of procedures for the continued operaion of a helicopter beyond a scheduled terminal where he finds that, in the particular circumstances of the case, literal compliance with this requirement is not necessary in the interest of safety.

46.392 *Operation in icing conditions.*

(a) A helicopter shall not be released, or en route operations continued, or landing made when, in the opinion of the pilot in command or the air carrier, icing conditions are expected or encountered which might adversely affect the safety of the flight.

(b) No helicopter shall take off or continue en route operations when frost, snow, or ice is adhering to the rotors, control surfaces, or other movable parts of the helicopter.

46.393 *Release and continuance of flight.*

(a) A heliport specified as the intended destination may be changed en route to another regular, provisional, or refueling heliport, providing the original flight release is amended.

(b) When the flight release is amended while the helicopter is en route, such amendment shall be made a matter of record.

46.396 *Fuel supply for HVR operations.* No helicopter shall be released for flight unless it carries sufficient fuel:

(a) To fly to the heliport to which released, and thereafter;

(b) To fly for a period of at least 20 minutes at normal cruising consumption.

46.397 *Factors involved in computing fuel required.* In computing the fuel required, consideration shall be given to the wind and other weather conditions forecast, traffic delays anticipated, and any other conditions which might delay the landing of the helicopter. Required fuel shall be additional to unusable fuel.

46.405 *Take-off and landing weather minimums; HVR.* Irrespective of any clearance which may be obtained from air traffic control, no helicopter shall take off or land when the reported ceiling or ground visibility is less than that specified in the air carrier's operations specifications.

46.408 *Minimum flight altitudes.* Minimum flight altitudes shall be prescribed by the Administrator in the interest of safety for any route or portion thereof. In establishing such minimum altitudes the Administrator shall consider the character of the terrain to be traversed, the type of helicopter involved, the availability of suitable emergency autorotative landing areas, the quality and quantity of meteorological service, the navigational facilities available, and other flight conditions as may be pertinent.

46.412 *Preparation of load manifest.* The air carrier shall be responsible for the preparation and accuracy of a load manifest form prior to each take-off. This form shall be prepared by personnel of the air carrier charged with the duty of supervising the loading of helicopters and the preparation of load manifest forms or by other qualified persons authorized by the air carrier.

## Required Records and Reports

46.500 *Records.* Each scheduled air carrier shall maintain records and submit reports in accordance with the requirements of sections 46.501 through 46.511. All records shall be retained for the period specified in Part 249 of Subchapter B of this chapter (Economic Regulations), unless otherwise specified in sections 46.501 through 46.511.

46.501 *Crew member records.* Each air carrier shall maintain current records of every crew member. These records shall contain such information concerning the qualifications of each such crew member as is necessary to show compliance with the appropriate requirements of the regulations of this subchapter, e.g., proficiency and route checks, helicopter qualifications, training, physical examinations, and flight time records. The disposition of any flight crew member released from the employ of the air carrier, or who becomes physically or professionally disqualified, shall be indicated in these records which shall be retained by the air carrier for at least three months.

46.503 *Flight release form.*

(a) The flight release may be in any form but shall contain at least the following information with respect to each flight:

(1) Identification number of the helicopter to be used, and the trip number.

(2) Heliport of departure, intermediate stops, destination, and routes to be followed;

(3) Minimum fuel supply;

(4) Type of operation, e.g., HVR, day, night; and

(5) Date and time of release.

(b) The flight release may be executed orally when the pilot is at a station removed from the operational control center, in which case the release shall be recorded.

46.504 *Load manifest.*

(a) The load manifest shall contain at least the following information with respect to the loading of a helicopter at the time of take-off:

(1) The weight of:

(i) Helicopter,

(ii) Fuel and oil,

(iii) Cargo, including mail and baggage, and

(iv) Passengers;

(2) The maximum allowable weight applicable for the particular flight;

(3) The total weight computed in accordance with approved procedures; and

(4) Evidence that the helicopter is loaded in accordance with an approved schedule which insures that the center of gravity is within approved limits.

(b) The load manifest shall be prepared and signed for each flight by qualified personnel of the air carrier charged with the duty of supervising the loading of the helicopter and the preparation of load manifest forms, or by other qualified personnel authorized by the air carrier.

(c) Time and date of preparation, registration number of helicopter, and trip number.

46.505 *Disposition of load manifest and flight release.* Copies of the completed load manifest, or information therefrom except with respect to cargo and passenger distribution, and the flight release shall be in the possession of the pilot in command and shall be carried in the helicopter to its destination. Copies also shall be kept for at least 60 days.

46.506 *Maintenance records.*

(a) Each air carrier shall keep at its principal maintenance base current records of the total time in service, the time since last overhaul, and the time since last inspection of all major components of the airframe, powerplants, rotors, and, where practicable, appliances.

(b) Records of total time in service may be discontinued when it has been shown that the service life of a component part is safely controlled by other means, such as inspection, overhaul, or parts retirement procedures. The Administrator may require the keeping of total time records for specific parts when it is found that other procedures will not safely limit the service life of such parts.

(c) A helicopter component, powerplant, rotor, or appliance for which complete records are not available may be placed in service: *Provided, That:*

(1) It is of a type for which total time-in-service records are not required under the provisions of paragraph (b) of this section;

(2) Parts which are limited by the Administrator or manufacturer to a specific service time are retired and replaced by new parts; and

(3) It has been properly overhauled or rebuilt, and a record of such overhaul or rebuilding is included in the maintenance records.

46.507 *Maintenance log.* A legible record shall be made in the helicopter's maintenance log of the action taken in each case of reported or observed failures or malfunctions of airframes, powerplants, rotors, and appliances critical to the safety of the flight. The air carrier shall establish an approved procedure for retaining an adequate number of such records in the helicopter in a place readily accessible to the flight crew and shall incorporate such procedure in the air carrier manual. The maintenance log shall contain information from which the flight crew may readily determine the time since last overhaul of the airframe, and engine(s).

[46.508 *Mechanical reliability reports.*

[(a) Each air carrier shall report the occurrence or detection of those failures, malfunctions, or defects specified in paragraph (b) of this section. In addition, each air carrier shall report any other failure, malfunc-

tion, or defect which occur or is detected at any time in a helicopter or helicopter component (including helicopter systems, appliances, powerplants, and propellers) used by the air carrier, when, in the carrier's opinion, such failure, malfunction, or defect has endangered or may endanger the safe operation of a helicopter used by the air carrier. The report shall be in written form covering a period of 24 hours beginning at 0900 hours local time of each day and ending at 0900 hours local time the next day, and shall be submitted to the Federal Aviation Agency maintenance inspector assigned to the air carrier by 0900 hours local time of the following day: *Provided,* That reports which are due on Saturday or Sunday may be submitted on the following Monday and in case of legal holidays on the following workday.

[NOTE: Failures, malfunctions, or defects reported in accordance with the accident reporting provisions of Part 320 of the Regulations of the Civil Aeronautics Board need not be included.

[(b) The air carrier shall report each occurrence or detection of a failure, malfunction, or defect involving:

[(1) Fires during flight and whether the related fire-warning system functioned properly;

[(2) Fires during flight and whether the related fire-warning system did not function properly;

[(3) Fires during flight not protected by a related fire-warning system;

[(4) False fire warning during flight;

[(5) Engine exhaust systems which result during flight in damage to engine, adjacent structure, equipment, or components;

[(6) A helicopter component which results during flight in the accumulation or circulation of smoke, vapor, or toxic or noxious fumes in the crew compartment or cabin;

[(7) Engine shutdown during flight due to engine flameout;

[(8) Engine shutdown during flight when external damage to the engine or to the helicopter structure has occurred;

[(9) Engine shutdown during flight due to foreign object ingestion or icing;

[(10) (Reserved.)

[(11) (Reserved.)

[(12) Fuel systems affecting fuel flow or causing hazardous leakage during flight;

[(13) (Reserved.)

[(14) (Reserved.)

[(15) Helicopter structure which requires major repair;

[(16) Cracks, permanent deformation, or corrosion of helicopter structure which exceed the maximum limits acceptable to the manufacturer or the Federal Aviation Agency;

[(17) Helicopter components or systems which result during flight in the taking of emergency actions; except that action taken to shutdown an engine need not be reported as an emergency under this provision; and

[(18) Main rotor or auxiliary rotor system.

[NOTE: Under the provisions of this paragraph, a helicopter is in flight from the moment it leaves the surface of the earth on takeoff until it touches down at a place of landing.

[(c)Reports required by paragraph (a) of this section shall be transmitted in a manner and on a form convenient to the air carrier's system of communication and procedure, and shall include in the first daily report as much of the following information as is available:

[(1) Type and identification number of the helicopter, name of the operator, date, flight number, and stage during which the incident occurred; e.g., preflight, takeoff, climb, cruise, descent, landing, inspection;

[(2) Emergency procedure effected; e.g., unscheduled landing, emergency descent;

[(3) Nature of condition; e.g., fire, structural failure;

[(4) Identification of part and system involved, including available information pertaining to type designation of the major component and time since overhaul;

[(5) Apparent cause of trouble; e.g., wear, crack, design deficiency, personnel error;

[(6) Disposition; e.g., repaired, replaced, helicopter grounded, part sent to

manufacturer; and

[(7) Brief narrative summary of other pertinent information necessary for more complete identification, determination of seriousness, and corrective action.

[(d) Reports required by paragraph (a) shall not be withheld pending accumulation of all information specified in paragraphs (b) and (c) of this section. When additional information is obtained relative to the incident, including any that may be furnished by the manufacturer or other outside agency, it shall be expeditiously submitted as a supplement to the first report, referencing the date and place of submission of such report.

[(Amendment 46-4, published in 27 F.R. 1247, Feb. 10, 1962, effective Mar. 12, 1962.)]

46.509 *Mechanical interruption summary report.* Each air carrier shall submit regularly and promptly to the Administrator a summary report containing information on the following occurrences:

[(a) 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 that are not required to be included in mechanical reliability reports.

[(Amendment 46-4, published in 27 F.R. 1247, Feb. 10, 1962, effective Mar. 12, 1962.)]

(b) The number of engines removed prematurely because of mechanical trouble, listed by make and model of engine and the helicopter type in which the engine was installed.

46.510 *Alteration and repair reports.* Reports of major alterations or repairs of airframes, powerplants, rotors, and appliances shall be made available to the Administrator promptly upon completion of such alterations or repairs.

46.511 *Maintenance release.* When a helicopter is released by the maintenance organization to flight operations, a maintenance release or appropriate entry in the maintenance log certifying that the helicopter is in an airworthy condition shall be prepared and signed by a maintenance inspector or a person authorized by the inspection organization prior to release of such helicopter. If a maintenance release form is prepared, a copy shall be given to the pilot in command. An appropriate record shall be kept for at least 60 days.

# Appendix A

**Special Civil Air Regulations**
**Which Affect Part 46**

## SPECIAL CIVIL AIR REGULATION NO. 425C

Effective: June 6, 1961
Adopted: May 31, 1961
Published: June 6, 1961
(26 F.R. 4990)

Provisional Certification and Operation of Aircraft

**Special Civil Air Regulation No. SR–425A was adopted on July 22, 1958, to provide for provisional certification of turbine-powered transport category airplanes in order to permit certain air carriers and manufacturers to conduct crew training, service testing, and simulated air carrier operations prior to introduction of the airplanes into commercial service. The objective of this regulation was to provide a means whereby the air carriers and manufacturers could obtain as much experience as possible with turbine-powered airplanes which, although safe for flight, had not been approved for the issuance of a type certificate.**

**Special Civil Air Regulation No. SR–425B, which superseded SR–425A, was adopted on April 7, 1960, to extend the application of the regulation to: (1) piston-engine transport category aircraft, including rotorcraft; and (2) personal and executive type aircraft, including rotorcraft, irrespective of powerplant type. In addition, this regulation permitted operations such as sales demonstrations and market surveys with aircraft having a provisional type and airworthiness certificate.**

**To accomplish this, SR–425B provided for, among other things, the issuance of two classes of provisional type and airworthiness certificates. Class I provisional and airworthiness certificates could be issued for all types of aircraft for operation by the aircraft manufacturer. Class II provisional type and airworthiness certificates could be issued only for transport category aircraft, but these aircraft could be operated by either the aircraft manufacturer or a certificated air carrier. In general, the requirements for the issuance of Class I provisional certificates were less stringent, and the operating limitations less confining, than those for the issuance of Class II provisional certificates.**

**Under the provisions of SR–425B, however, eligibility to apply for Class I provisional certificates was limited to aircraft manufacturers. A recommendation that this eligibility be extended to include engine manufacturers had been evaluated by the Agency prior to the adoption of SR–425B, but rule making action on such extension was deferred until additional experience with provisional certification could be acquired.**

**Experience accumulated since the adoption of SR–425B has indicated that it would be practicable for engine manufacturers, who have altered a type certificated aircraft by installing type certificated engines of their own manufacture in place of the original engines, to show compliance with the currently effective requirements for issuance of Class I provisional type and provisional airworthiness certificates; and that compliance with these requirements will insure safe operation of provisionally certificated aircraft by such engine manufacturers. Further, the Agency**

believes that operations conducted by engine manufacturers under the terms of Class I provisional certificates, for the purpose of sales demonstrations, market surveys, and other similar activities related to the sale of their engines, would contribute to the promotion and development of civil aeronautics in the United States.

SR–425B is therefore being superseded by SR–425C to permit certain engine manufacturers to apply for Class I provisional type and provisional airworthiness certificates if they have applied for the issuance of a supplemental type certificate.

Since this is a superseding regulation which relieves restrictions and imposes no additional burden on any person, notice and public procedures hereon are unnecessary, and this regulation may be made effective on less than 30 days' notice.

In consideration of the foregoing, the following Special Civil Air Regulation is adopted to become effective June 6, 1961:

## GENERAL

1. *Applicability.* Contrary provisions of the Civil Air Regulations notwithstanding, provisional type and airworthiness certificates, amendments to provisional type certificates, and provisional amendments to type certificates, will be issued as prescribed in this regulation to a manufacturer or an air carrier. As used in this regulation, a manufacturer shall mean only a manufacturer who is a citizen of the United States; and the term air carrier shall not include an air taxi operator.

2. *Eligibility.*

(a) A manufacturer of aircraft manufactured by him within the United States may apply for Class I or Class II provisional type and provisional airworthiness certificates, for amendments to provisional type certificates held by him, and for provisional amendments to type certificates held by him.

(b) An air carrier holding an air carrier operating certificate authorizing him to conduct operations under Parts 40, 41, 42, or 46 of the Civil Air Regulations may apply for Class II provisional airworthiness certificates for transport category aircraft which meet the conditions of either subparagraphs (1) or (2) of this paragraph.

(1) The aircraft has a currently valid Class II provisional type certificate or an amendment thereto;

(2) The aircraft has a currently valid provisional amendment to a type certificate which was preceded by a corresponding Class II provisional type certificate.

(c) An engine manufacturer who has altered a type certificated aircraft by installing different type certificated engines, manufactured by him within the United States, in place of the original engines, may apply for Class I provisional type and provisional airworthiness certificates for such aircraft, and for amendments to Class I provisional type certificates held by him, if the basic aircraft, before alteration was type certificated in the normal, utility, acrobatic, or transport category.

3. *Application.*

(a) *General.* Applications for provisional type and airworthiness certificates, for amendments to provisional type certificates, and for

provisional amendments to type certificates, shall be submitted to the Chief, Flight Standards Division, FAA, of the Regional Office in which the manufacturer or air carrier is located and shall be accompanied by the pertinent information specified in this regulation.

4. *Duration.* Unless sooner surrendered, superseded, revoked, or otherwise terminated, certificates and amendments thereto, shall have periods of duration in accordance with paragraphs (a) through (f) of this section.

(a) A Class I provisional type certificate shall remain in effect for 24 months after the date of its issuance or until the date of issuance of the corresponding type or supplemental type certificate, whichever occurs first.

(b) A Class I provisional type certificate shall expire immediately upon issuance of a Class II provisional type certificate for aircraft of the same type design.

(c) A Class II provisional type certificate shall remain in effect for 6 months after the date of its issuance or 60 days after the date of issuance of the corresponding type certificate, whichever occurs first.

(d) An amendment to a Class I or a Class II provisional type certificate shall remain in effect for the duration of the corresponding provisional type certificate.

(e) A provisional amendment to a type certificate shall remain in effect for 6 months after its approval or until the amendment to the type certificate is approved, whichever occurs first.

(f) Provisional airworthiness certificates shall remain in effect for the duration of the corresponding provisional type certificate, amendment to a provisional type certificate, or a provisional amendment to the type certificate.

5. *Transferability of certificates.* Certificates issued pursuant to this regulation are not transferable except that a Class II provisional airworthiness certificate may be transferred to an air carrier eligible to apply for such certificate under section 2 of this regulation.

6. *Display of certificates and markings.* A provisional airworthiness certificate shall be prominently displayed in the aircraft for which it is issued. The words "Provisional Airworthiness" shall be painted in letters not less than 2 inches high on the exterior of such aircraft adjacent to each entrance to the cabin and cockpit of the aircraft.

## REQUIREMENTS FOR ISSUANCE

7. *Class I provisional type certificates.* A Class I provisional type certificate and amendments thereto will be issued for a particular type design when the eligible aircraft or engine manufacturer shows compliance with the provisions of paragraphs (a) through (f) of this section, and an authorized representative of the Administrator finds, on the basis of information submitted to him by the manufacturer in compliance with the provisions of this section and of other relevant information, that there is no feature, characteristic, or condition which would render the aircraft unsafe when operated in accordance with the limitations established in paragraph (d) of this section and in section 13 of this regulation.

(a) The manufacturer has applied for the issuance of a type or supplemental type certificate for the aircraft.

(b) The manufacturer certifies that the aircraft has met the provisions of subparagraphs (1) through (3) of this paragraph.

(1) The aircraft has been designed and constructed in accordance with the airworthiness requirements applicable to the issuance of the type or supplemental type certificate for the aircraft;

(2) The aircraft substantially complies with the applicable flight characteristics requirements for the type or supplemental type certificate;

(3) The aircraft can be operated safely under the appropriate operating limitations specified in this regulation.

(c) The manufacturer has submitted a report showing that the aircraft had been flown in all maneuvers necessary to show compliance with the flight requirements for the issuance of the type or supplemental type certificate and to establish that the aircraft can be operated safely in accordance with the limitations specified in this regulation.

(d) The manufacturer has established limitations with respect to weights, speeds, flight maneuvers, loading, operation of controls and equipment, and all other relevant factors. The limitations shall include all the limitations required for the issuance of a type or supplemental type certificate for the aircraft: *Provided,* That, where such limitations have not been established, appropriate restrictions on the operation of the aircraft shall be established.

(e) The manufacturer has established an inspection and maintenance program for the continued airworthiness of the aircraft.

(f) A prototype aircraft has been flown by the manufacturer for at least 50 hours pursuant to the authority of an experimental certificate issued under Part 1 of the Civil Air Regulations or under the auspices of a United States military service: *Provided,* That the number of flight hours may be reduced by the authorized representative of the Administrator in the case of an amendment to a provisional type certificate.

8. *Class I provisional airworthiness certificates.* Except as provided in section 12 of this regulation, a Class I provisional airworthiness certificate will be issued for an aircraft, for which a Class I provisional type certificate is in effect, when the eligible aircraft or engine manufacturer shows compliance with the provisions of paragraphs (a) through (d) of this section, and an authorized representative of the Administrator finds that there is no feature, characteristic, or condition of the aircraft which would render the aircraft unsafe when operated in accordance with the limitations established in sections 7(d) and 13 of this regulation.

(a) The manufacturer is the holder of the provisional type certificate for the aircraft.

(b) The manufacturer submits a statement that the aircraft conforms to the type design corresponding with the provisional type certificate and has been found by him to be in safe operating condition under the applicable limitations.

(c) The aircraft has been flown at least 5 hours by the manufacturer.

(d) The aircraft has been supplied with a provisional aircraft flight manual or other document and appropriate placards containing the limitations required by sections 7(d) and 13 of this regulation.

9. *Class II provisional type certificates.* A Class II provisional type certificate and amendments thereto will be issued for a particular transport category type design when the manufacturer of the aircraft shows compliance with the provisions of paragraphs (a) through (h) of this section, and an authorized representative of the Administrator finds, on the basis of information submitted to him by the manufacturer in compliance with the provisions of this section and of other relevant information, that there is no feature, characteristic, or condition which would render the aircraft unsafe when operated in accordance with the limitations established in paragraph (f) of this section and in sections 13 and 14 of this regulation.

(a) The manufacturer has applied for the issuance of a transport category type certificate for the aircraft.

(b) The manufacturer holds a type certificate and a currently effective production certificate for at least one other aircraft in the same transport category as the subject aircraft.

(c) The Agency's official flight test program with respect to the issuance of a type certificate for the aircraft is in progress.

(d) The manufacturer certifies that the aircraft has met the provisions of subparagraphs (1) through (3) of this paragraph.

(1) The aircraft has been designed and constructed in accordance with the airworthiness requirements applicable to the issuance of the type certificate for the aircraft;

(2) The aircraft substantially complies with the applicable flight characteristics requirements for the type certificate;

(3) The aircraft can be operated safely under the appropriate operating limitations specified in this regulation.

(e) The manufacturer has submitted a report showing that the aircraft had been flown in all maneuvers necessary to show compliance with the flight requirements for the issuance of the type certificate and to establish that the aircraft can be operated safely in accordance with the limitations specified in this regulation.

(f) The manufacturer has prepared a provisional aircraft flight manual which includes limitations with respect to weights, speeds, flight maneuvers, loading, operation of controls and equipment, and all other relevant factors. The limitations shall include all the limitations required for the issuance of a type certificate for the aircraft: *Provided,* That, where such limitations have not been established, the provisional flight manual shall contain appropriate restrictions on the operation of the aircraft.

(g) The manufacturer has established an inspection and maintenance program for the continued airworthiness of the aircraft.

(h) A prototype aircraft has been flown by the manufacturer for at least 100 hours pursuant to the authority of either an experimental certificate issued under Part 1 of the Civil Air Regulations or a Class I provisional airworthiness certificate: *Provided,* That the number of flight hours may be reduced by the authorized representative of the Administrator in the case of an amendment to a provisional type certificate.

10. *Class II provisional airworthiness certificates.* Except as provided in section 12 of this regulation, a Class II provisional airworthiness certificate will be issued for an aircraft, for which a Class II provisional type certificate is in effect, when the applicant shows compliance with the provisions of paragraphs (a) through (e) of this section, and an authorized representative of the Administrator finds that there is no feature, characteristic, or condition of the aircraft which would render the aircraft unsafe when operated in accordance with the limitations established in sections 9(f), 13, and 14 of this regulation.

(a) The applicant submits evidence that a Class II provisional type certificate for the aircraft has been issued to the manufacturer.

(b) The applicant submits a statement by the manufacturer that the aircraft has been manufactured under a quality control system adequate to insure that the aircraft conforms to the type design corresponding with the provisional type certificate.

(c) The applicant submits a statement that the aircraft has been found by him to be in a safe operating condition under the applicable limitations.

(d) The applicant submits a statement that the aircraft has been flown at least 5 hours by the manufacturer.

(e) The aircraft has been supplied with a provisional aircraft flight manual containing the limitations required by sections 9(f), 13, and 14 of this regulation.

11. *Provisional amendments to type certificate.* A provisional amendment to a type certificate will be approved when the manufacturer of the type certificated aircraft shows compliance with the provisions of paragraphs (a) through (g) of this section, and an authorized representative of the Administrator finds, on the basis of information submitted to him by the manufacturer in compliance with the provisions of this section and of other relevant information, that there is no feature, characteristic, or condition which would render the aircraft unsafe when operated in accordance with the limitations established in paragraph (e) of this section, and section 13 and, if applicable, section 14 of this regulation.

(a) The manufacturer has applied for an amendment to the type certificate.

(b) The Agency's official flight test program with respect to the amendment of the type certificate is in progress.

(c) The manufacturer certifies that the aircraft has met the provisions of subparagraphs (1) through (3) of this paragraph.

(1) The modification involved in the amendment to the type certificate has been designed and constructed in accordance with the airworthiness requirements applicable to the issuance of the type certificate for the aircraft;

(2) The aircraft substantially complies with the applicable flight characteristics requirements for the type certificate;

(3) The aircraft can be operated safely under the appropriate operating limitations specified in this regulation.

(d) The manufacturer has submitted a report showing that the aircraft incorporating the modifications involved had been flown in all maneuvers necessary to show compliance with the flight require-

ments applicable to these modifications and to establish that the aircraft can be operated safely in accordance with the limitations specified in this regulation.

(e) The manufacturer has established, in a provisional aircraft flight manual or other document and appropriate placards, limitations with respect to weights, speeds, flight maneuvers, loading, operation of controls and equipment, and all other relevant factors. The limitations shall include all the limitations required for the issuance of a type certificate for the aircraft: *Provided,* That, where such limitations have not been established, appropriate restrictions on the operation of the aircraft shall be established.

(f) The manufacturer has established an inspection and maintenance program for the continued airworthiness of the aircraft.

(g) An aircraft modified in accordance with the corresponding amendment to the type certificate has been flown by the manufacturer for the number of hours found necessary by the authorized representative of the Administrator, such flights having been conducted pursuant to the authority of an experimental certificate issued under Part 1 of the Civil Air Regulations.

12. *Provisional airworthiness certificates corresponding with provisional amendment to type certificate.* A Class I or a Class II provisional airworthiness certificate, as specified in section 2 of this regulation, will be issued for an aircraft, for which a provisional amendment to the type certificate has been issued, when the applicant shows compliance with the provisions of paragraphs (a) through (e) of this section, and an authorized representative of the Administrator finds that there is no feature, characteristic, or condition of the aircraft, as modified in accordance with the provisionally amended type certificate, which would render the aircraft unsafe when operated in accordance with the limitations established in sections 11(e) and 13 and, if applicable, section 14 of this regulation.

(a) The applicant submits evidence that approval has been obtained for the relevant provisional amendment to the type certificate for the aircraft.

(b) The applicant submits evidence that the modification to the aircraft was accomplished under a quality control system adequate to insure that the modification conforms to the provisionally amended type certificate.

(c) The applicant submits a statement that the aircraft has been found by him to be in a safe operating condition under the applicable limitations.

(d) The applicant submits a statement that the aircraft has been flown at least 5 hours by the manufacturer.

(e) The aircraft has been supplied with a provisional aircraft flight manual or other document and appropriate placards containing the limitations required by sections 11(e) and 13 and, if applicable, section 14 of this regulation.

## OPERATING LIMITATIONS

13. *Operation of provisionally certificated aircraft.* An aircraft for which a provisional airworthiness certificate has been issued shall

be operated only by a person eligible to apply for a provisional airworthiness certificate in accordance with section 2 of this regulation. Operations shall be in compliance with paragraphs (a) through (j) of this section.

(a) The aircraft shall not be operated in air transportation unless so authorized in a particular case by the Director, Bureau of Flight Standards.

(b) Operations shall be restricted to the United States, its Territories and possessions.

(c) The aircraft shall be limited to the types of operations listed in subparagraphs (1) through (7) of this paragraph.

(1) Flights conducted by the aircraft or engine manufacturer in direct conjunction with the type or supplemental type certification of the aircraft;

(2) Training of flight crews, including simulated air carrier operations;

(3) Demonstration flights conducted by the manufacturer for prospective purchasers;

(4) Market surveys by the manufacturer;

(5) Flight checking of instruments, accessories, and equipment, the functioning of which does not adversely affect the basic airworthiness of the aircraft;

(6) Service testing of the aircraft;

(7) Such additional operations as may be specifically authorized by the authorized representative of the Administrator.

(d) All operations shall be conducted within the prescribed limitations displayed in the aircraft or set forth in the provisional aircraft flight manual or other document containing the limitations for the safe operation of the aircraft: *Provided,* That operations conducted in direct conjunction with the type or supplemental type certification of the aircraft shall be subject to the experimental aircraft limitations of section 1.74 of Part 1 of the Civil Air Regulations, and all "flight tests" as defined in section 60.60 of the Civil Air Regulations shall be conducted in accordance with the requirements of section 60.24 of that part.

(e) The operator shall establish procedures for the use and guidance of flight and ground personnel in the conduct of operations under this section. Specific procedures shall be established for operations from and into airports where the runways require takeoffs or approaches over populated areas. All procedures shall be approved by an authorized representative of the Administrator. All operations shall be conducted in accordance with such approved procedures.

(f) The operator shall insure that each flight crewmember is properly certificated and possesses adequate knowledge of, and familiarity with, the aircraft and the procedures to be used by him.

(g) The aircraft shall be maintained in accordance with applicable Civil Air Regulations, with the inspection and maintenance program established in accordance with this regulation, and with any special inspections and maintenance conditions prescribed by an authorized representative of the Administrator.

(h) No aircraft shall be operated under authority of a provisional airworthiness certificate if the manufacturer or the authorized

representative of the Administrator determines that a change in design, construction, or operation is necessary to insure safe operation, until such change is made and approved by the authorized representative of the Administrator. Section 1.24 of Part 1 of the Civil Air Regulations shall be applicable to operations under this section.

(i) Only those persons who have a bona fide interest in the operations permitted under this section or who are specifically authorized by both the manufacturer and the authorized representative of the Administrator may be carried in provisionally certificated aircraft: *Provided,* That they have been advised by the operator of the provisional certification status of the aircraft.

(j) The authorized representative of the Administrator may prescribe such additional limitations or procedures as he finds necessary. This shall include limitations on the number of persons who may be carried aboard the aircraft.

14. *Additional limitations to operations by air carriers.* In addition to the limitations in section 13 of this regulation, operations by air carriers shall be subject to the provisions of paragraphs (a) through (d) of this section.

(a) In addition to crewmembers, the aircraft may carry only those persons who are listed in section 40.356(c) of Part 40 of the Civil Air Regulations or who are specifically authorized by both the air carrier and the authorized representative of the Administrator.

(b) The air carrier shall maintain current records for each flight crewmember. These records shall include such information as is necessary to show that each flight crewmember is properly trained and qualified to perform his assigned duties.

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

(d) A log of all flights conducted under this regulation, and accurate and complete records of inspections made and maintenance accomplished, shall be kept by the air carrier and made available to the manufacturer and to an authorized representative of the Administrator.

15. *Other operations.* The Director, Bureau of Flight Standards, may credit toward the aircraft proving test requirements of the applicable air carrier regulations such operations conducted pursuant to this special regulation as he finds have met the applicable aircraft proving test requirements: *Provided,* That he also finds that there is no significant difference between the provisionally certificated aircraft and the aircraft for which application is made for operation pursuant to an air carrier operating certificate.

CERTIFICATES ISSUED UNDER SR–425A AND SR–425B

16. *Duration.* Currently valid provisional type and airworthiness certificates issued in accordance with Special Civil Air Regulations Nos. SR–425A and SR–425B shall remain in effect for the durations and under the conditions prescribed in those regulations.

This special regulation supersedes Special Civil Air Regulation No. SR–425B and shall terminate on June 30, 1963, unless sooner superseded, rescinded, or otherwise terminated.

## 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 detemine 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 regultaion 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.

# Addendum

Preambles of Amendments to Civil Air Regulations Part 46

**NOTE**

**Part 46 of the Civil Air Regulations was adopted by the Civil Aeronautics Board on April 2, 1958, to become effective on October 1, 1958. The preamble of the new part, and the preambles of amendments thereto, are given in the attached pages.**



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## New Part 46

**Scheduled Air Carrier Helicopter Certification and Operation Rules**

**Adopted: Apr. 2, 1958**
**Effective: Oct. 1, 1958**
**Published: Apr. 8, 1958 (23 F.R. 2264)**

Special Civil Air Regulation No. SR–400A, effective January 25, 1956, continued in effect the provisions of SR–400 and SR–369 and provides for regulation, on an interim basis, of the certification and operation of scheduled air carrier helicopters. These Special Civil Air Regulations also gave authority to the Administrator to issue air carrier operating certificates to scheduled air carrier helicopter operators and to permit deviations from Parts 40 and 61 as in effect December 31, 1953.

As the regulatory requirements of Parts 40 and 61 are not directly applicable to helicopter operations, it has been necessary for the Administrator to use the authority contained in SR–400A to grant waivers where necessary and appropriate.

In the interest of establishing specific regulatory requirements for scheduled helicopter operations, Civil Air Regulations Draft Release No. 50–2, "Scheduled Air Carrier Helicopter Certification and Operation Rules," was prepared and circulated to all interested parties for comment on February 20, 1950. As a result of the comments and recommendations received at that time, it was decided that immediate adoption of helicopter regulations was premature.

In late 1951, a revised draft of proposed Part 46 was prepared but issuance of this draft was delayed until such time as it could be made to conform with the general policy then being established in new Part 40 entitled "Scheduled Interstate Air Carrier Certification and Operation Rules."

Subsequently, Draft Release 53–12, "Scheduled Air Carrier Helicopter Certification and Operation Rules," was circulated on July 23, 1953, for comment by interested parties. The comment on this draft release was consolidated and circulated, and a meeting was held in Washington in June of 1954 for the purpose of discussing the revised proposal. Following this meeting, proposed Part 46 was again revised, published in the Federal Register, and circulated as Draft Release 56–2 on January 19, 1956.

The suggestions made in the comments submitted thereon have been carefully studied and where considered appropriate have been included in this part. These comments also brought to light several controversial matters. These matters which are discussed below have been resolved as equitably as possible and in the opinion of the Board the determinations which have been reached will assure reasonable and satisfactory standards of safety.

The Board is of the opinion that the use of certificated dispatchers in exercising operational control of scheduled air carrier helicopters is not essential to safety and need not be required. In reaching this determination the Board took into consideration that two of three presently certificated helicopter air carriers have operated for a number of years with an excellent safety record without utilizing certificated dispatchers and have developed means of securing operational control of helicopters in flight and prior to release for flight which are satisfactory to the Administrator; that generally all operations are conducted in a limited metropolitan area under visual flight rules; and that flight stage lengths are short in all cases. In addition consideration was given to the nature of the route structures and the fact that emergency landing areas will be available at almost all points along the route. A requirement that the carrier establish and maintain a training program to insure that all operations personnel who perform duties involving operational control of helicopters are adequately trained in their duties and responsibilities has, however, been included in this part.

Comment received revealed a wide variance of opinion concerning the proper method of computing flight time in helicopter operations. Some persons contended that "block-to-block time" as presently required in Part 40 is also appropriate for Part 46. Others contended that "rotor time" (the time from which the rotors start turning for the purpose of flight until they stop at the end of a flight or series of flights) is the only valid measure of determining pilot fatigue time. In view of this controversy, the Board, published in the

Federal Register (22 F.R. 10758) and on December 20, 1957, circulated as Draft Release 57–29, a notice that oral argument would be heard on the issue of the definition of "flight time" in Part 46. This argument was heard on January 23, 1958. After careful consideration of the comments and arguments presented, the Board has concluded that the "block-to-block" method of computing flight time limitations which is presently applicable to all scheduled air carrier operations, including helicopters, is a safe and reasonable method to determine such limitations and should be used in this part. In reaching this conclusion, the Board found that the difference between airplane and helicopter ground operations is not of such significance as to warrant different methods of determining maximum flight time limitations. One of the factors considered was that devices have been developed by which helicopter flight controls can be secured while the rotors are in motion on the ground. These devices relieve the pilot of most of the duties which were generally required during ground operation of helicopters. In addition, the Board considers that the present and anticipated use of two-pilot crews in scheduled helicopter operations and other improvements in equipment will also materially reduce the time and attention required of pilots in their duties while the helicopter is on the ground with the rotors turning.

Sections 46.30 and 46.31, which concern routes, specify that definite routes and route widths shall be established and approved by the Administrator. This concept is considered essential in view of the fact that all of the helicopters presently certificated for civil operations are single-engine and there is an attendant need for satisfactory emergency landing areas at all times in the event of engine failure. Furthermore, all of the present operations are conducted over and adjacent to metropolitan areas where much caution must be exercised in determining helicopter routes. The Board is also persuaded by the fact that the Administrator has considered it necessary in the past to establish and approve routes with a designated width for all certificated scheduled helicopter operations.

With respect to the proposed requirements for section 46.261(b), the Board has concluded that it is desirable to incorporate in this part the provisions of Part 40 presently in effect which require the use of a copilot when instrument operations are authorized or when helicopters weighing more than 12,500 pounds are used.

Concerning the proposed requirements of section 46.200(c) which pertain to instrument lights, the Board is of the opinion that this requirement should conform, as closely as possible, to the corresponding provisions in Part 40. Although some changes have been made in this paragraph there is no intention to change the present interpretation which is being followed regarding instrument light requirements.

With respect to the proposed requirements of section 46.304(c) concerning the maintenance and re-establishment of route qualifications, the Board is of the opinion that a 3-month period is more realistic in view of the operation involved than the 12-month period as proposed in Draft Release 56–2 or the 6-month period proposed in Draft Release 53–12. Since current practice presently achieves this objective, no burden will be imposed by setting the requirement at 3 months.

Paragraph (b) of section 46.304 requires a pilot utilized in night helicopter operations as pilot in command to make at least one trip each 30 days during daylight over the route he is scheduled to fly. This is considered necessary due to the congested areas over which helicopter operations are conducted and the need for familiarization and knowledge concerning all obstructions, hazards, and emergency landing areas along the route. This can best be achieved during daylight hours.

This part will become effective 6 months after adoption in order to allow ample time for the air carriers and the Administrator to prepare for its implementation. It is fully realized that in the past, when a major part of the regulation has been implemented, difficulty has been encountered by the air carriers in the preparation of manuals, establishing personnel training programs and operational procedures, and familiarization of all personnel concerned with the details of the new requirements. The Administrator has, on occasion, also been handicapped by lack of time to fully and properly prepare Civil Aeronautics Manual material concerning a new part of the regulations and to distribute guidance material to CAA field personnel who must enforce such regulations and assist the air carriers in implementing new procedures and practices.

Interested persons have been afforded an opportunity to participate in the making of this amendment (21 F.R. 631), and due consideration has been given to all relevant matter presented.

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## Amendment 46–1

Absence of Flight Crew Members From Their Duty Stations

Adopted: Apr. 17, 1959
Effective: Apr. 22, 1959
Published: Apr. 23, 1959
(24 F.R. 3155)

Section 46.354 of the Civil Air Regulations requires all flight crew members to remain at their respective stations with seat belts fastened during takeoff or landing, and while en route except when the absence of one such flight crew member is necessary in connection with his "regular duties." As used in this regulation the term "regular duties" was intended to mean those duties involving the operation of the aircraft. It was not intended to encompass activities related to furthering public relations or other activities not related to operational safety of the aircraft. The absence of a flight crew member from his duty station for the performance of such activities unnecessarily reduces the degree of vigilance, attention to duty, and availability for emergency action required for the operation of modern aircraft under conditions of high density traffic.

Accordingly, section 46.354 is being amended to clarify its intention and application. Similar amendments are being made simultaneously to Parts 40, 41, 42, and 60 of the Civil Air Regulations to provide identical rules for all operations covered by those parts.

Inasmuch as this amendment is a clarification of the present requirements and imposes no additional burden on any person, compliance with the notice, procedures and effective date provisions of section 4 of the Administrative Procedure Act is unnecessary and not required.

Amendment revised section 46.354.

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## Amendment 46–2

Frequency of Pilot Proficiency Checks

Adopted: Sept. 24, 1959
Effective: Oct. 29, 1959
Published: Sept. 30, 1959
(24 F.R. 7866)

Part 46 of the Civil Air Regulations presently requires each pilot in command to successfully pass pilot proficiency checks at least twice in each 12-month period. Section 46.302(b) requires such checks to be given at intervals of not less than 4 months nor more than 8 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.

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

Amendment revised paragraph (b) of section 46.302.

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## Amendment 46–3

Frequency of Pilot Line Checks

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

Section 46.302(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 46.302(a) by adding two new sentences after the first sentence.

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## Amendment 46–4

Mechanical Reliability Reports

Adopted: Feb. 6, 1962
Effective: Mar. 12, 1962
Published: Feb. 10, 1962
(27 F.R. 1247)

The Federal Aviation Agency published as a notice of proposed rule making (26 F.R. 1410) and circulated as Civil Air Regulations Draft Release No. 61–2 dated February 8, 1961, a proposal to amend Parts 40, 41, 42, and 46 of the Civil Air Regulations to establish requirements for the reporting of specific types of malfunctions, failures, and defects occurring to aircraft.

With the adoption of this amendment, it should be noted that the title, Daily Mechanical Report (DMR), is changed and will hereafter be known as the Mechanical Reliability Report (MRR). The Federal Aviation Agency believes the name to be appropriate in that it is more descriptive of the concept of the report.

The currently effective provisions of Part 46 require operators to submit daily a report known as a daily mechanical report (DMR) which contains information concerning each failure, malfunctioning, or other defect, regardless of where detected, which may reasonably be expected by the air carrier to cause a serious hazard in the operation of a helicopter.

The lack of specific reporting requirements and the fact that each air carrier reported only those items which, in the opinion of the air carrier, constitute a hazard, heretofore resulted in inadequate and nonuniform reporting. Various attempts were made to correct these inadequacies, such as joint industry-government meetings and the use of a trial reporting guide for a 6-month period. Some improvement in reporting was accomplished; however, satisfactory reporting was not achieved. In accordance with the proposal contained in Draft Release 61–2, this amendment specifies certain helicopter and helicopter component failures, malfunctions, or defects which must be reported by air carriers in mechanical reliability reports. In addition, an air carrier is required to report other helicopter and helicopter component failures, malfunctions, or defects, even though they are not specified in the rule, when the air carrier is of the opinion that they may seriously endanger the safe operation of its helicopter.

In Draft Release 61–2 it was proposed to require air carriers to report engine shutdowns during flight necessitated or caused by helicopter component failure, malfunction, or defect. Although the Agency evaluates the significance of every engine shutdown, regardless of cause or effect, it has been determined that it is presently not necessary to require all engine shutdowns to be included in mechanical reliability reports. Accordingly, in this amendment, the proposed rule has been changed to require mandatory reporting of engine shutdowns only when they involve engine flameout, foreign object ingestion or icing, or external damage to the engine or helicopter. Paragraph (b)(17) of section 46.508 has been worded to make it clear that action taken to shutdown an engine in flight need not be reported as an emergency action under the requirements of that provision.

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.

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## 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.

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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.

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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 stongly 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 provsion 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 manuevers. 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 manuever 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 autoratative 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 perfomed 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.

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