Federal Aviation Agency

Washington, D.C.

Civil Aeronautics Manual 46

Scheduled Air Carrier Helicopter Certification and Operation Rules

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Supplement No. 3, CAM 46 dated August 1959 **May 1, 1962**

SUBJECT: Revisions to CAM 46

This supplement is issued to incorporate into CAM 46 Civil Air Regulations Amendments 46-4, 46-5, and 46-6.

Amendment 46-4 concerns mechanical reliability reports. It was issued February 6, 1962, to become effective March 12, 1962.

Amendment 46-5 concerns the illumination of passenger emergency exit markings. It was issued February 12, 1962, to become effective March 20, 1962.

Amendment 46-6 concerns oil temperature indicators or warning devices for main rotor drive gearboxes. This amendment stemmed from the First Federal Aviation Agency Airworthiness Review. It was issued March 27, 1952, to become effective May 3, 1962.

New or revised material is enclosed in black brackets on the pages submitted with this supplement.

Remove the following pages:	*Insert the following new* pages:
III	III
7 through 10	7 through 10-1
19 and 20	19 through 20-1
P-5 and P-8	P-5 through P-8

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Attachments.

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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 ease 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) Instrumentsand 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 466, published in **27** F.R. 3004, March 30, 1962, effective May 3, **1962.)]**

(1) 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 465, 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 Bight.

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 aresatisfactory;

(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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(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.

(e) 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).

L46.508 ***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 he included.

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

[(1) Fires during Bight 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;

[(IO) (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 Bight 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. 1241, Feb. 10, 1962, effective Mm. 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 464, 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.

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 46.334 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 mute 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 far the operation of modern aircraft under conditions of hiih density traffic.

Accordingly, section 43.354 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 Aot is unnecessary and not required.

Amendment revised section 46.354.

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.

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 believe 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 cheeks.

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.

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

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

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

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

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

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

Amendment 46–5

Illumination of Passenger Emergency Exit Markings

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

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

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

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

Interested persons have been afforded an opportunity to participate in the making of this regulation and due consideration has been given to all relevant matter presented. In general, all comments received from interested persons as a result Of the Agency's notice of proposed rule making were favorable to the proposal.

Amendment revised paragraph (d) of section 46.173.

Amendment 46–6

Miscellaneous Amendment Resulting From the First Federal Aviation Agency Airworthiness Review

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

As a result of the First Federal Aviation Agency Airworthiness Review, the Agency published a notice of proposed rule making affecting several parts of the Civil Air Regulations. This notice was published in the Federal Register (26 F.R. 5130) and circulated as Civil *Air* Regulations Draft Release No. El-l.2 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 'i 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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