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CIVIL AERONAUTICS MANUAL 42

U. S. Department of Commerce — Civil Aeronautics Administration

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Supplement No. 2 — June 15, 1950

Subject: Revisions to CAM 42

The purpose of this supplement is to provide holders of Civil Aeronautics Manual 42 with revised CAA rules and policies issued pursuant to Civil Air Regulation 42.0, 42.25, 42.31. These revised portions of CAM 42 were published in the Federal Register on May 24, 1950.

Instructions for the insertion of revised manual pages:

REMOVE AND DESTROY THE FOLLOWING PAGES:	INSERT IN LIEU THEREOF THE FOLLOWING PAGES:
42.0 and on the back 42.1	42.0 and on the back 42.0-1 42.1 and on the back 42.1
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Office of Aviation Safety — E. S. HENSLEY, Director

IRREGULAR AIR CARRIER CERTIFICATION AND OPERATION RULES

"CAR § 42.0 *Applicability of Part 42.* (a) The provisions of this part shall apply to irregular air carriers operating in interstate, overseas, or foreign air transportation, to Alaskan air carriers when authorized by the Administrator under the provisions of § 41.1 (a), and to air carriers holding scheduled air carrier operating certificates when making charter trips or when performing other special services.

"(b) An air carrier holding a scheduled air carrier operating certificate may elect to conduct charter flights or other special services between points which it is authorized to serve under the terms of such certificate, under the provisions of Part 41, or 40 and 61, as the case may be and the scheduled air carrier operating certificate: *Provided,* That the certificate is amended to authorize such operation: *And provided further,* That charter or special services to other points shall be conducted under the provisions of this part, except that it shall not be necessary for the carrier to obtain an irregular air carrier operating certificate if its scheduled air carrier operating certificate is appropriately amended."

§ 42.0–1 *Charter flights or other special services (CAA policies which apply to § 42.0 (b))*—(a) *General.* The policies provided in this section will be applied by the Civil Aeronautics Administration in amending a scheduled air carrier operating certificate to authorize charter flights or other special services.

(b) *Authority.* Upon application, a scheduled air carrier electing under § 42.0 (b) of the Civil Air Regulations to conduct charter trips or other special services pursuant to the provisions of its scheduled air carrier operating certificate, may have such certificate amended to authorize such operations.

(c) *Application for amendment.* Application for this amendment will consist of submission of Form ACA–1014, Operations Specifications, available at the local Aviation Safety District Office. On the face (blank side) of the form, the air carrier will list all the operations for which authorization is desired, as outlined in paragraph (d) of this section. The air carrier will also complete the upper half of the back of the form, and submit the signed original and four copies to the local Aviation Safety Agent.

(d) *Operations specifications.* The amended scheduled air carrier operating certificate will include Form ACA–1014, Operations Specifications, and an amendment to the scheduled air carrier operating certificate. This amendment will be issued by the Chief, Safety Operations Division, of the region having direct inspectional responsibility for the air carrier's principal operations. The Form ACA–1014 will be prepared by the applicant; and will be prefaced by the statement: "Charter Flights or Other Special Services are authorized in the following category and class aircraft under the conditions specified and within the areas of operation listed."; and will specify the category and class of aircraft authorized to be used (e. g., Airplane Multi-engine Land); the flight conditions under which operations are authorized (e. g., VFR Day, VFR Night, IFR Day, IFR Night); whether the carriage of passengers, cargo, or both is authorized; and the areas of operation (e. g., Continental U. S., and specific U. S. territories or possessions and foreign countries or possessions).

(6-15-50)

(e) *Operation outside the United States, its territories or possessions.* When applying for an amendment to a scheduled air carrier operating certificate to include charter or other special services outside the United States, its territories or possessions, the following paragraph will also be included on the Form ACA–1014:

When operating aircraft pursuant to the terms of this certificate and these operations specifications over or within any foreign country, the air carrier shall comply with the provisions of the air traffic rules of such country, including any special air traffic rules applicable to air carriers, except where any rule prescribed in the Civil Air Regulations is more restrictive and may be followed without violating the rules of such country.

(f) *Areas of operation.* The areas of operation will be included on the Form ACA–1014 and will encompass specific countries or possessions of such countries instead of continental areas. Operations within the United States should be shown as "Continental United States". When a country or possession is comprised of a number of islands, the group, rather than the individual islands, should be listed, i. e., Solomon Islands, Bahama Islands, British, French or Dutch West Indies, Hawaiian Islands, etc.

(g) *Flight operations and maintenance manuals.* Prior to the conduct of operations off route, the Flight Operations and Maintenance Manuals will be revised to incorporate additional instructions to flight and ground personnel for the operation, servicing and handling of the aircraft used in this type of service.

(h) *Scheduled air carriers holding irregular air carrier operating certificates.* A scheduled air carrier holding an irregular air carrier operating certificate may conduct charter flights or other special services both on route and off route under the provisions of such certificate and this part without amending its scheduled air carrier operating certificate in accordance with the above. However, if a scheduled air carrier, holding an irregular operating certificate elects to amend its scheduled operating certificate to include charter flights or other special services, the irregular operating certificate will be surrendered to the Civil Aeronautics Administration for cancellation at the time the amendment to the scheduled operating certificate becomes effective.

"CAR § 42.1 *Definitions.* (a) As used in this part the words listed below shall be defined as follows:

"(1) *Accelerate-stop distance.* Accelerate-stop distance is the distance required to reach the critical point of take-off and, assuming failure of the critical engine at that point, to bring the airplane to a stop using approved braking means. (See the airworthiness requirements under which the airplane was type certificated for the manner in which such distance is determined.)

"(2) *Air carrier.* Air carrier means any citizen of the United States who undertakes directly the carriage by aircraft of persons or property as a common carrier for compensation or hire, whether such carriage is wholly by aircraft or partly by aircraft and partly by other forms of transportation between any of the following places: 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; places in the same State of the United States through the airspace over any place outside thereof; places in the same Territory or possession of the United States, or the District of Columbia; a place in any State of the United States, or the District of Columbia, and any place in a Territory or possession of the United States, and a place in any other Territory or possession of the United States; a place in the United States and any place outside thereof; or the carriage of mail by aircraft.

"(3) *Alaskan air carrier.* Alaskan air carrier includes any air carrier subject to the provisions of Part 292 [1] of the Economic Regulations as heretofore or hereafter amended.

"[1] Part 292 currently provides that Alaska ari carriers shall include certificated and noncertificated air carries engaging solely in air transportation within the Territory of Alaska.

"(4) *Alternate airport.* An alternate airport is one listed in the flight plan as a point to which a flight may be directed if, subsequent to departure, a landing at the point of intended destination becomes inadvisable.

"(5) *Approach or take-off area.* The approach or take-off area shall be an area symmetrical about a line coinciding with and prolonging the center line of the runway, or the most probable landing or take-off path for instrument approaches where there is a multiplicity of parallel runways or a large hard-surfaced area continuously available for landing or take-off. This area shall be assumed to extend longitudinally in a straight line from the intersection of the obstruction clearance line with the runway to the most remote obstacle touched by the obstruction clearance line and in no case less than 1,500 feet. Thence, it shall be assumed to continue in a path consistent with the instrument approach or take-off procedures for the runway in question or, where such procedures are not specified, consistent with turns of at least 4,000 feet in radius. It shall be further assumed to extend laterally at the point of intersection of the obstruction clearance line with the runway 200 feet on each side of such center line. This distance shall increase uniformly to 500 feet on each side of such center line at a longitudinal distance of 1,500 feet from such point of intersection. Thereafter, this distance shall be assumed to be 500 feet on each side of such center line.

"(6) *Approved.* Approved, when used either alone or as modifying other words such as "means," "method," "action," etc., shall mean approved by the Administrator.

"(7) *Check pilot.* Check pilot is a pilot authorized by the Administrator to check pilots of the air carrier for such items as familiarity with en route procedures and piloting technique.

"(8) *Crew member.* Crew member means any individual assigned for the performance of duty on the aircraft other than as a flight crew member.

"(9) *Critical engine.* The critical engine is the engine the failure of which gives the most adverse effect on the performance characteristics of the aircraft. (See the airworthiness requirements under which the airplane was type certificated for the manner in which such engine is determined.)

"(10) *Critical-engine-failure speed.* The critical-engine-failure speed is a true indicated air speed, selected by the aircraft manufacturer, at which the take-off may be safely continued even though the critical engine becomes suddenly inoperative. (See the airworthiness requirements under which the airplane was type certificated for the manner in which such speed is determined.)

"(11) *Critical point of take-off.* The critical point of take-off is that point beyond which the aircraft cannot be brought to a safe stop in the event of failure of the critical engine. (See the airworthiness requirements under which the airplane was type certificated for the manner in which such point is determined.)

"(12) *Effective length of runway.* The effective length of runway is the distance from the point where the obstruction clearance line intersects the runway to the far end thereof.

"(13) *Flight crew member.* Flight crew member means a pilot, flight radio operator, flight engineer, or flight navigator assigned to flight duty on the aircraft.

"(14) *Flight time.* Flight time shall mean the total time from the moment the aircraft first moves under its own power for the purpose of flight until the moment it comes to rest at the end of the flight.

"(15) *IFR.* The symbol used to designate instrument flight rules.

"(16) *Irregular air carrier.* Irregular air carrier includes any air carrier subject to the provisions of Part 291 [2] of the Economic Regulations as heretofore or hereafter amended.

"[2] Part 291 currently provides that the term 'irregular air carrier' means any air carrier which (1) directly engages in air transportation; (2) does not hold a certificate of public convenience and necessity under section 401 of the Civil Aeronautics Act of 1938, as amended; and (3) does not operate or hold out to the public, expressly or by course of conduct, that it operates one or more aircraft between designated points, or within a des-

42.25-1 COCKPIT CHECK LIST. (*CAA policies which apply to section 42.25.*)

The cockpit check list shall be legible during hours of daylight and darkness under the light conditions of the cockpit.

Check lists developed by the manufacturer, military services, or the operator will be considered satisfactory, providing the following steps are covered:

Prior to starting engines,
Prior to take-off,
Cruising,
Prior to landing,
Powerplant emergencies,
After landing,
Stopping engines.

It is recommended that in all multiengine equipment a one-engine inoperative check list be available in cockpit for pilot reference after encountering difficulty which may cause one or more engines to become inoperative. It is further recommended that all aircraft having retractable gear and flaps also have check lists prepared for emergency use in event of failure.

42.25-2 MINIMUM STANDARD COCKPIT CHECK LIST. (*CAA policies which apply to section 42.25.*)

The following check list using general terms will be considered as the minimum standard check list for compliance with the foregoing requirements in irregular air carrier operations. Those items not applicable to the aircraft being operated may be deleted and the order of arrangement of the individual items is left to the air carrier. The check list shall include all applicable items, but will not necessarily be limited thereto.

PRIOR TO STARTING ENGINE

Fuel System

Quantity—checked.
Proper tank selection—checked.
Mixtures—as required.
Fuel booster pumps—as required.
Cross feeds—as required.

Hydraulic System [3]

Brakes—set.

Electrical System

Battery switch—proper position.

PRIOR TO TAKE-OFF

Weight and Balance

Pilot is aware of weight and take-off limitations.

Fuel System [3]

Quantity—rechecked.
Proper tank selection—rechecked.
Mixtures—take-off position.
Fuel booster pumps—as required.
Cross feed—as required.

Hydraulic System [3]

Hydraulic pressures and quantity—checked.
Brakes—checked.
Hydraulic selector valves—checked.

Anti-Icing and De-Icing Equipment [3]

Checked and set.

Electrical System

Battery switch—proper position.
Invertors—as required.
Ignition—checked.
Generators—checked.
Radio—checked.

Powerplants and Propellers [3]

Propellers—checked and set in take-off position.
All engines—checked for proper functioning and required power.
Superchargers—checked and set in proper take-off position.

Heaters

Checked and set.

Instruments

Engine—
Oil: quantity, temperature, and pressure—normal for take-off.
Fuel pressure—normal for take-off.
Carburetor temperature—checked.
Cylinder head temperature—checked.

Flight—
Static and vacuum selectors—checked.
Directional gyro—set.
Altimeter—set.
Horizon—uncaged.
Turn and bank—checked.
Clock—set.

[3] These items will be double-checked, such as by challenge and response, or positively checked, such as by a mechanical method.

Pressurization [3]

Checked.

Flaps [3]

Wing flaps—take-off position.
Cowl flaps—take-off position.

Controls [3]

Auto pilot—off.
Trim tabs—set for take-off.
Gust locks—off.
Free and tested through full limit of travel.

PRIOR TO LANDING

Fuel System [3]

Proper tank selection—checked.
Mixtures—landing position.
Fuel booster pumps—as required.
Cross feeds—as required.

Weight and Balance

Maximum landing gross weight—checked.

Hydraulic System [3]

Hydraulic pressure—checked.
Brakes—checked and off.
Hydraulic selector valves—checked.

Anti-Icing and De-Icing Equipment [3]

Checked.

Powerplants and Propellers

Propellers—as required.
Superchargers—as required.
Manual reverse pitch actuator or indicator—checked [3]

Heaters [3]

Checked.

Instruments

Static and vacuum selectors—checked.
Altimeter—set.
Directional gyro—set.

Pressurization [3]

Checked.

[3] These items will be double-checked, such as by challenge and response, or positively checked, such as by a mechanical method.

Controls

Auto pilot—off.
Trim tabs—as desired.

Landing Gear [3]

Down and locked—checked.

Flaps [3]

Wing flaps—as desired.
Cowl flaps—as desired.

POWERPLANT EMERGENCIES

Fuel System

Mixture—Idle cut-off on dead engine; required position on all others.
Fuel selector valve: dead engine—off.
Fuel booster pumps: dead engine—off.
Cross feeds—as required.
Throttle: dead engine—closed.

Hydraulic System

Hydraulic selector valve—set on proper engine.
Hydraulic pressures—checked.
Brakes—checked.

Electrical System

Ignition: off—dead engine.
Generators: off—dead engine.

Powerplants and Propellers

Propellers: low r. p. m. and feathered on dead engine—set as required on all live engines.
Engine—All live engines set for proper functioning and required power.
Superchargers—checked and set in proper position.

Heaters

Checked and set in safe operation position.

Instruments

Engine—oil temperature and pressure checked.
Engine—fuel supply and presure checked.
Carburetor—temperature checked.
Cylinder head—temperature checked.

Flight Instruments

Checked and reset if necessary.

Pressurization

Checked.

"CAR § 42.26 *Oxygen.* Aircraft operated at an altitude exceeding 10,000 feet above sea level continuously for more than 30 minutes, or at an altitude exceeding 12,000 feet above sea level for any length of time, shall be equipped with effective oxygen apparatus and an adequate supply of oxygen available for the use of the operating crew. Such aircraft shall also be equipped with an adequate separate supply of oxygen available for the use of passengers when operated at an altitude exceeding 12,000 feet above sea level."

MAINTENANCE REQUIREMENTS

"CAR § 42.30 *General.* No person shall operate an aircraft which is not in an airworthy condition. All inspections, repairs, alterations, and maintenance shall be performed in accordance with Part 18 of the Civil Air Regulations, and with the maintenance manual when required by § 42.32 (d)."

42.30-1 GENERAL. (*CAA policies which apply to section 42.30.*)

It is the operator's responsibility to maintain all aircraft in an airworthy condition at all times when operated in irregular air carrier operation.

All maintenance, repairs, overhauls, and alterations shall be accomplished under the supervision of a certificated airman holding the appropriate mechanical rating for the work involved.

All repairs, overhauls, and alterations shall be in accordance with materials, procedures, and standards set forth in CAM 18 using proper equipment and tools for the type of work involved.

CAA Airworthiness Directives and manufacturers' manuals, directives, bulletins, and notes shall be complied with as directed.

Large aircraft must be maintained in accordance with the time limitations and maintenance schedules prescribed in the approved maintenance manual and the applicable Civil Air Regulations.

No engine or other major component which has not been maintained in accordance with the maintenance manual shall be installed in a large aircraft unless such engine or component is shown to be in an airworthy condition, and that it complies with current Airworthiness Directives. This may be accomplished by showing (1) that the engine or component is new and of current manufacture, (2) has been overhauled within the last 90 days by a certificated repair agency holding appropriate ratings, or (3) by disassembly to the extent necessary for the assigned agent to determine the airworthiness and extent of compliance with Airworthiness Directives and manufacturers' service bulletins.

Small aircraft must be maintained in accordance with the provisions of the applicable Civil Air Regulations and the manufacturer's recommendations. No aircraft will be dispatched on any flight during which the aircraft may exceed any prescribed maintenance time limitations.

"CAR § 42.31 *Inspections and maintenance.* (a) Aircraft shall be given a preflight check to determine compliance with § 42.51 (e) and, in addition, shall meet the following requirements:

"(1) Large aircraft shall be maintained and inspected in accordance with a continuous maintenance and inspection system as provided for in the maintenance manual.

"(2) Small aircraft shall either be maintained and inspected in accordance with subparagraph (1) of this paragraph or be given a periodic inspection at least every 100 hours of flight time and an annual inspection at least every 12 months. The annual inspection may be accepted as a periodic inspection.

"(b) A record shall be carried in the aircraft at all times showing that the latest inspections required by paragraphs (a) (1) or (2) have been accomplished, except such record may be kept at the principal operations base when the aircraft is maintained and inspected as provided in paragraph (a) (1) of this section."

42.31-1 INSPECTIONS AND MAINTENANCE—LARGE AIRCRAFT. (*CAA policies which apply to section 42.31 (a) (1).*)

A continuous maintenance and inspection system is one in which a prescribed schedule of maintenance and inspection functions is set forth in the maintenance manual approved by the Administrator. The schedules of maintenance functions shall include the overhaul time limitations and inspection program including time limitations which are considered adequate by the Administrator to maintain the aircraft in a continuously airworthy condition.

42.31-2 MAINTENANCE AND INSPECTION—SMALL AIRCRAFT. (*CAA policies which apply to section 42.31 (a) (2).*)

The operator may elect to establish a continuous maintenance and inspection system in his

maintenance manual for the maintenance of small aircraft in the same manner as is required for the maintenance of large aircraft. Under such circumstances the maintenance manual requirements and all limitations applicable to large aircraft will also be applicable to small aircraft. Otherwise the inspections shall be conducted in accordance with the periodic and annual inspection requirements of this section and, in addition, overhauls must be conducted at or before the time limitations recommended by the manufacturers of the aircraft, aircraft engine, or other components as prescribed in CAM 18.

§ 42.31–3 *Maintenance and inspection; all aircraft (CAA policies which apply to § 42.31 (a) (1) and (2)).* The following procedures will be applicable in establishing basic engine overhaul time limitations for both large and small irregular air carrier aircraft:

(a) Basic overhaul time limitations for multi-engine aircraft powerplants may be established at a figure not to exceed 700 hours for new air carrier operators provided the engine type has previously been utilized in an air carrier operation for such period of time that its operating reliability has been established. Reliability of the engine will be based on data obtained in operational service and through inspection and overhaul of the engine.

(b) Multi-engine aircraft powerplants which meet the conditions of paragraph (a) of this section, but whose reliability has not been so proved may have basic overhaul time limitations established at a figure not to exceed 600 hours.

(c) Basic overhaul time limitations for single-engine aircraft powerpl nts will be established in accordance with the manufacturer's recommended periods for new air carrier operators using such equipment. Where the manufacturer does not recommend specific periods for overhaul of the engine, one of the two following conditions will be applicable.

(1) Operators who have previously operated and satisfactorily maintained the engine in question (as revealed by service and overhaul records) may have the basic overhaul time limitation for that engine established at a figure not to exceed 600 hours.

(2) Operators who have not had the experience necessary to demonstrate the ability to operate and maintain the pertinent engine in accordance with subparagraph (1) of this paragraph, may have basic overhaul time limitations established at a figure not to exceed 500 hours for the engine concerned.

Amendment of these basic periods may be accomplished in accordance with standard procedures when authorized by the Administrator.

42.31–4 MAINTENANCE AND INSPECTION RECORDS. (*CAA policies which apply to section 42.31 (b).*)

The record required in this paragraph may consist of the aircraft log book if it is so arranged as to provide full information on the maintenance work performed on the aircraft. In case the aircraft is maintained under a continuous maintenance and inspection system, the maintenance records which are utilized in such system may be considered as complying with this requirement; however, all such records shall be complete and shall properly identify the aircraft, aircraft time, and the extent of maintenance work or inspections performed. When maintenance or inspection functions are performed away from the principal maintenance base, a copy of the record of maintenance or inspections performed shall be retained in the aircraft and a copy promptly mailed to the principal maintenance base.

"CAR § 42.32 *Additional maintenance requirements for large aircraft.* The following requirements are applicable to operations conducted in large aircraft:

"(a) *Facilities.* Facilities for the proper inspection, maintenance, overhaul, and repair of the types of aircraft used shall be maintained by the air carrier, unless arrangements acceptable to the Administrator are made with other persons possessing such facilities.

"(b) *Maintenance personnel.* A staff of qualified mechanics, inspectors, and appropriate supervisory personnel shall be employed by the air carrier and kept available for performing the functions specified in

§ 42.30, except where the air carrier has obtained the approval of the Administrator for the performance of such functions by some other person. The air carrier shall permit maintenance to be performed only by an individual competent therefor.

"(c) *Reporting of mechanical irregularities occuring in operation.* Each air carrier shall prescribe in its operations manual a procedure for the submission of written reports by the members of the flight crew for all mechanical irregularities occurring during the operation of the aircraft. The members of the flight crew designated by the air carrier shall submit a written report in accordance with such system to the person responsible for the maintenance of the aircraft. This report shall be submitted at the end of each through flight or sooner if the seriousness of the irregularity so warrants. Such report or copy thereof indicating the action taken shall be retained in the aircraft for the information of the next flight crew.[5]

[5] See § 42.96 for the requirements for reporting aircraft or component malfunctioning and defects.

"(d) *Maintenance manual.* (1) The air carrier shall prepare and maintain for the use and guidance of maintenance personnel a maintenance manual which contains full information pertaining to the maintenance, repair, and inspection of aircraft and equipment and clearly outlines the duties and the responsibilities of maintenance personnel. The form and content shall be acceptable to the Administrator. It shall contain a copy of the approved time limitations for inspection and overhauling of aircraft, aircraft engines, propellers, and appliances. Copies and revisions shall be furnished to all persons designated by the Administrator. All copies in the hands of company personnel shall be kept up to date.

"(2) A copy of those portions pertaining to the aircraft shall be carried therein.

"(3) Any changes prescribed by the Administrator in the interest of safety shall be promptly incorporated in the manual. Other changes not inconsistent with any Federal regulation, the air carrier operating certificate, or safe operating practices may be made without prior approval of the Administrator.

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