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CIVIL AERONAUTICS MANUALS—Volume VII

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SUBJECT: Revisions to Civil Aeronautics Manual 42 dated August 1956.

On February 8, 1957, the Civil Aeronautics Board adopted an amendment to Part 42 concerning the use of aircraft simulators in training programs and proficiency checks. This amendment authorized a pilot-in-command to substitute the satisfactory completion of an approved course of training in an aircraft simulator for one of the pilot proficiency checks required during each 12 months. These CAM revisions contain the rules which set forth the minimum requirements for an aircraft simulator approved training course. These revisions also contain the policies which describe the systems or conditions which aircraft simulators should simulate when used in approved training courses.

New or revised material is indicated by black brackets.

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Director, Office of Flight Operations and Airworthiness.

Attachments.

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checked in all types of aircraft he is scheduled to fly. However, the following exceptions should be allowed:

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

(b) If a pilot is scheduled to fly both land aircraft and seaplanes, his instrument checks should include a demonstration of competency in both land aircraft and seaplane in accordance with paragraph (a).

(Published in 18 F. R. 1912, Apr. 7, 1953, effective Apr. 25, 1953.)

42.44–4 *Use of flight simulator in instrument checks (CAA policies which apply to sec. 42.44 (a) (3)).* An air carrier using a flight simulator in its pilot training program may be approved to utilize such a device for certain maneuvers in conducting instrument checks when (a) the training device accurately simulates the flight characteristics and the performance of the applicable aircraft through all ranges of normal and emergency operation, (b) a description of the maneuvers to be conducted in the simulator, other than those specifically authorized in paragraphs (l), (m), (n), (o), (p), and (q) of section 42.44–2, is submitted to the Washington office for approval by the region in which the headquarters of the air carrier is located, and (c) certain critical maneuvers which demonstrate the instrument proficiency of a pilot are executed in an aircraft of the type flown by the pilot in air carrier service. The proficiency flight in the aircraft should include at least maneuvers (minimum speed), approach procedures, handling under regular approach conditions, and takeoff and landings, with engine failures as outlined in section 42.44–2, paragraphs (g), (q), (u), and (v) respectively.

(Published in 18 F. R. 1912, Apr. 7, 1953, effective Apr. 25, 1953.)

42.44–5 *Persons from whom the equipment and instrument checks must be received (CAA interpretations which apply to sec. 42.44).*

(a) "An authorized representative of the Administrator" as used in this section means a CAA Flight Operations and Airworthiness Inspector.

(b) "A check pilot of the air carrier" as used in this section means a check pilot of the air carrier by which the pilot is presently employed. Therefore, checks given to a pilot by the check pilot of a previous employer within the preceding 6 months do not satisfy the experience requirements of subparagraphs (2) and (3) of section 42.44 (a).

(Published in 21 F. R. 450, Jan. 21, 1956, effective Jan. 21, 1956; amended effective June 15, 1957.)

42.44–6 *Flight engineer qualifications for duty (CAA interpretations which apply to sec. 42.44).* An airman assigned to flight-check other flight engineers must meet the recent experience requirements of this part before serving as a flight engineer in air transportation. However, the time spent in giving flight engineer checks may be applied toward the 50-hour recent experience requirement on a particular type of aircraft. Unless such experience has been obtained within the preceding 12-month period, a check by the air carrier or an authorized representative of the Administrator is required.

(Published in 21 F. R. 678, Jan. 31, 1956, effective Feb. 15, 1956; amended in 21 F. R. 2373, Apr. 12, 1956, effective upon publication.)

[42.44–7 *Requirements for approved training course—aircraft simulator (CAA rules which apply to sec. 42.44 (a) (4)).*

[(a) *Application for approval.* An applicant desiring approval of an aircraft simulator training course shall submit his application in triplicate to the local Air Carrier Safety Inspector. The application shall contain a training course, including a description of the equipment, facilities, and material to be used, together with a letter to the Administrator of Civil Aeronautics requesting approval [8a] of the course. The application shall be prepared in looseleaf form, shall

[8a] The Administrator will review the training course, and if it is found adequate, will return an approved copy of the application to the applicant.

include a table of contents, time required for each phase of the course; and procedures for administering the following training course:

[(1) *Training course.* Flight equipment used shall be identical to that used in actual flight operations and the course [8b] shall incorporate at least the following subjects:

[(i) All of the required maneuvers in section 40.282 (b) (1) of this subchapter and section 42.44–2 except the visual flight maneuvers performed around the airport.

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

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

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

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

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

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

[42.44–8 *Simulation requirements of aircraft simulators used in an approved training course (CAA policies which apply to sec. 42.44 (a) (4)).* The aircraft simulator should fully simulate the following systems or conditions:

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

(Published in 22 F. R. 8999, Nov. 9, 1957, effective Nov. 25, 1957.)

42.45 *Proficiency of crew members serving on large aircraft.* Each air carrier shall establish a training program sufficient to ensure that each crew member used by the air carrier is adequately trained and maintains adequate proficiency to perform the duties to which he is to be assigned.

(a) The training program shall consist of appropriate ground and flight training, including all subjects contained in the Operations Manual. Procedures for each crew function shall be standardized to the extent that each flight crew member will know the functions for which he is responsible.

(b) No air carrier shall initially assign an individual as a pilot unless he has satisfactorily accomplished a written examination by the carrier to ensure his familiarity with the contents of the Operations Manual and with all types of instrument approach and navigational facilities and procedures to be used. Thereafter, a pilot shall not be utilized by an air carrier unless during the preceding six months.

(1) He has satisfactorily accomplished such written examination, or

[8b Any logical arrangement of the training course material will be acceptable, if all the required maneuvers are included, with appropriate description of techniques and procedures.

(2) He has been in the continuous employ of the air carrier and continuously participating in the training program of the air carrier.

(c) Each air carrier shall provide a sufficient number of check pilots to be able through its own personnel to give each pilot the checks necessary to comply with the requirements of section 42.44 (a). Check pilots shall make written reports of all pilot deficiencies disclosed by checks, and the carrier shall make provisions for such additional pilot training as may be required in each particular case.

42.45–1 *Training program (CAA policies which apply to sec. 42.45).*

(a) *Ground phase.* The ground phase of the air carrier's pilot training and instruction program shall include:

(1) A study of the regulations in this subchapter applicable to irregular air carrier operation and of the provisions of the air carrier's operating certificate, including methods and principles of determining weight limitations for landings and takeoffs;

(2) A study of the company's operations manual and procedures;

(3) Training in the duties and responsibilities of flight crew and crew members;

(4) Through familiarization with the aircraft to be flown including the engines and all major components, operation of cabin pressurization (if installed), oxygen system, standard operating procedures, a study of the CAA approved Airplane Flight Manual;

(5) A study of navigation, use of radio aids to navigation and such refresher courses necessary to keep airmen current in the application of any new developments;

(6) A study of meteorology sufficient to maintain a practical knowledge of the principles of icing, fog, thunderstorms and frontal systems, etc., and the best method of operating under these various conditions.

Training and instruction in synthetic-type training devices may be included in the ground phase of the training program. However, such training should be so planned that it will supplement the flight training phase and afford further training in specific instrument let-down procedures to be conducted by the pilot in irregular air carrier operations.

(b) *Flight phase.* The flight phase of the training program should be so planned as to insure adequate initial qualification of the pilot on the type aircraft on which he is to serve. It shall also provide for the continued maintenance of a high standard of pilot proficiency. This training shall include, but not be limited to:

(1) Takeoffs and landings under varying conditions of load, wind, low ceiling and visibility, inoperative engine, etc.;

(2) Flight with one or more engines inoperative, including flight with any one engine fully throttled at maximum authorized load, either at one-engine-inoperative service ceiling or at an altitude equivalent to 1,000 feet above the highest part of the terrain on the route or routes to be flown;

(3) Operating under normal and maximum limits of power and speed;

(4) Conduct instrument flight including navigation by low frequency radio ranges, VHF, and ADF, letting-down-through procedures utilizing radio range, ADF, ILS, GCA, etc., whichever is used by the air carrier in its normal operations.

(c) *Emergency procedures.* The training program shall include instruction in emergency procedures particularly with respect to engine failure, fire in the air or on the ground, evacuation of passengers, location and operation of all emergency equipment, power settings for maximum endurance and maximum range, etc.

(d) *Other.* Whenever flight engineers, flight radio operators, flight navigators, or cabin attendants are utilized, appropriate and adequate training and instruction shall be included in the air carrier's training program.

(Published in 14 F. R. 7039, Nov. 22, 1949, effective upon publication.)

42.46 *Logging flight time.*

(a) A pilot in command may log his total flight time.