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Supplement No. 3 — **November 25, 1957**

SUBJECT: Revisions to CAM 40 dated April 1, 1956, and CAM 41 dated February 1956.

On February 8, 1957, the Civil Aeronautics Board adopted an amendment to Parts 40 and 41 concerning the use of aircraft simulators in training programs and proficiency checks. These amendments 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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29 and 30	29 through 30–1

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Director, Office of Flight Operations and Airworthiness.

Attachments.

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pilot's file which will list the emergency procedures accomplished, date performed, and grade received.

(y) *Additional training.* If performance of any of the above items is unsatisfactory in the judgment of the check pilot he may, at his discretion, give additional training to the pilot during the course of the proficiency check. If after such training, the pilot being checked is still unable to demonstrate satisfactory performance to the check pilot, he shall not be used in scheduled operation until such time as he shall have demonstrated proficiency.

(Published in 18 F. R. 8682, December 24, 1953, effective January 1, 1954.)

40.302–2 *Frequency of pilot checks (CAA interpretations which apply to sec. 40.302).*

(a) The carrier shall establish a base check month for each pilot used as a pilot-in-command. In the case of new pilots in command, this base check month will be the month in which the initial qualifying line and proficiency checks are given. In the event that the line and proficiency checks are not both given in the same calendar month, the base check month shall be the month in which the first of such initial qualifying checks was given. In the case of pilots who were currently qualified as pilots-in-command on January 1, 1954, such base check month shall be the month in which the last 6-month check required under section 61.112 was given.

(b) The subsequent line checks required by section 40.302 (a) must be given not later than the end of the same calendar month as the base month in each succeeding calendar year.

(c) The first of the two proficiency checks required by section 40.302 (b) shall be given not sooner than the first day of the fourth full month following the month in which the last proficiency check was given and shall be given not later than the end of the eighth full month following the month in which the last proficiency check was given. The second of the two proficiency checks required by section 40.302 (b) must be given not later than the end of the same calendar month as the base month each succeeding calendar year. In no event shall a pilot be eligible to serve as pilot-in-command unless he has been given such a proficiency check within the last 8 months.

(d) When a pilot for any reason has not met the pilot check requirements of this section, he must be given re-qualifying line and proficiency checks prior to being used as pilot-in-command. In this case, the base check month shall be re-established the same as though such pilot was a new pilot-in-command.

Example 1. A pilot took a proficiency check on August 30, 1953. His base month, therefore, is August 1953. The earliest date for his next proficiency check is December 1, 1953, and the latest date for the second proficiency check in the 12-month period is August 30, 1954. However, instead of December, this pilot could have taken a proficiency check in January, February, March or April, provided the second proficiency check is taken in August 1954.

Example 2.—A pilot was not currently qualified with respect to proficiency checks on April 1, 1954. His initial proficiency check qualification date is April 3, 1954, and April 1954 becomes his base month. The earliest date on which he can take the first of the two required proficiency checks is August 1, 1954, but not later than December 31, 1954. If he is given a proficiency check in August 1954, the earliest possible time for his second check will be December 1954 and the latest permissible time, April 1955. However, if he takes his second check in December 1954, then his next proficiency check must come within 8 months of that period or not later than the end of August 1955.

(Published in 18 F. R. 6619, October 17, 1953, effective January 1, 1954.)

40.302–3 *Pilot checks use of synthetic trainer (CAA policies which apply to sec. 40.302 (b) (2) (ii)).* An air carrier using a flight simulator in its pilot's training program may be approved to utilize such a device for certain maneuvers in conducting proficiency checks provided that (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) the maneuvers to be conducted in the simulator other than those specifically authorized in section 40.302–1, paragraphs (l), (m), (n), (o), (p), and (q), are

submitted to the Washington office for approval by the region in which the headquarters of the air carrier is located, (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 circling approach conditions, and takeoff and landings, with engine failures as outlined in section 40.302–1, paragraphs (g), (q), (u), and (v), respectively.

(Published in 18 F. R. 6619, October 17, 1953, effective January 1, 1954.)

[40.302–4 *Requirements for approved training course—aircraft simulator (CAA rules which apply to sec. 40.302 (b) (3)).*

[(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 [7a] of the course. The application shall be prepared in looseleaf form, shall 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 [7b] shall incorporate at least the following subjects:

[(i) All of the required maneuvers in section 40.282 (b) (1) and section 40.302–1 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. 8997, November 9, 1957, effective November 25, 1956.)

[40.302–5 *Simulation requirements of aircraft simulators used in an approved training course (CAA policies which apply to sec. 40.302 (b) (3)).* 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.

(Rev. 11/25/57)

[7a] The Administrator will review the training course, and if it is found adequate, will return an approved copy of the application to the applicant.

[7b] 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.

Pressurization system for aircraft intended to operate above 25,000 feet.
De-icing and anti-icing systems.
Oxygen system for the flight crew.

(Published in 22 F. R. 8997, November 9, 1957, effective November 25, 1957.)

40.303-1 *Pilot route and airport qualification requirements (CAA interpretations which apply to sec. 40.303).* In order to meet the knowledge requirements of section 40.303 (b), the pilot-in-command must demonstrate adequate knowledge of the subjects listed in section 40.303 (b) for a route on which he is to serve between the regular, refueling, or provisional airports listed in the air carrier's operations specifications and any major differences which may exist between that route and any other route over which he may serve between such airports. In such case, the pilot is considered qualified over any off-airway route listed in the Form 514A or a civil airway, control area extension, or control zone between such airports if he has also met the provisions of sections 40.303 (c) and (d) where applicable.

(Published in 18 F. R. 6619, October 17, 1953, effective January 1, 1954.)

40.307-1 *Flight engineer qualifications for duty (CAA interpretations which apply to sec. 40.307).* 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 requirements on a particular type of aircraft. Unless such experience has been obtained within the preceding 6-month period, a check by the air carrier or an authorized representative of the Administrator is required.

(Published in 21 F. R. 678, January 31, 1956, effective February 15, 1956.)

Flight Operations

40.355-1 *Manipulation of controls (CAA interpretations which apply to sec. 40.355).* The phrase "qualified on the airplane" means a certificated pilot holding a type rating for the aircraft utilized, or a copilot, not holding a type rating if he has met the qualification requirements of the Civil Air Regulations: *Provided,* That a certificated pilot with at least a commercial rating may, at the discretion of the pilot in command, manipulate the controls except during takeoff and landing.

(Published in 18 F. R. 6619, October 17, 1953, effective January 1, 1954.)

40.356-1 *Admission to pilot compartment (CAA interpretations which apply to sec. 40.356).* The term "flight deck" as used in section 40.356 is interpreted to mean all of the area forward of the door or window required by Parts 4a and 4b of the Civil Air Regulations to be located between the pilot compartment and the passenger compartment.

(Published in 18 F. R. 6619, October 17, 1953, effective January 1, 1954.)

Dispatching Rules

40.390-1 *Alternate airport landing minimums for airports not served by a radio navigation facility (CAA policies which apply to sec. 40.390 (b)).* When there is no minimum en route instrument altitude associated with an alternate airport, the approval of alternate airport landing minimums under overcast conditions will be contingent upon (a) the incorporation of appropriate minimum en route altitudes in the air carriers operations manual in order to provide a basis for establishing weather minimums in accordance with section 40.390 (c) and (b) the availability of radio navigation facilities of sufficient adequacy to permit safe navigation over such alternate airport. The latter may be accomplished by using

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letdown aid which is not installed and operating at locations where the air carrier's pilots are based. In this case the air carrier should conduct the proficiency flights at locations where such an aid is installed and operating. All other approaches for which a particular operator may be authorized to use, such as ADF, LF/MR range, VOR, and VAR should be made and may be conducted in a simulator or other approved type trainer. A record should be maintained in the pilot's file which will indicate the date that these approaches were performed and the grade received. If these approaches (ADF, LF/MR range, VOR, and VAR) are not performed in a simulator or other approved type trainer, they should be accomplished on the proficiency flight.

(r) *Missed approach procedures.* (See par. (s) of this section.)

(s) *Traffic control procedures.* Missed approach procedures and traffic control procedures should be accomplished in a manner satisfactory to the authorized check pilot. The degree of satisfactory or unsatisfactory performance should be predicated on the pilot's ability to (1) maneuver the aircraft while performing these procedures, and (2) follow instructions either verbal or written which may be pertinent to the accomplishment of these procedures. Paragraphs (r) and (s) of this section may be accomplished while performing paragraph (q) of this section.

(t) *Crosswind landing.* A crosswind landing should be performed when practicable. Traffic conditions and wind velocities will dictate whether a crosswind landing is practicable. Performance should be judged on the technique used in correcting for drift on final approach, judgment in the use of flaps, and directional control during roll-out.

(u) *Landing under regular approach conditions.* Landing under regular approach conditions will necessitate a path of flight around the landing area of not more than a 180° turn but not less than a 90° turn. The pilot should be judged on the basis of altitude and airspeed control and his ability to maneuver under the minimum ceiling and visibility conditions prescribed.

(v) *Takeoffs and landings (with engine(s) failures).* If it is consistent with safety, traffic patterns, local rules, and laws, a simulated engine failure should be experienced during takeoff. The simulated failure should occur at any time after the aircraft has passed the V_1 speed pertinent to the particular takeoff and when practicable before reaching 300 feet. When performing the landing, the aircraft should be maneuvered to a landing while utilizing 50 percent of the available power units. The simulated loss of power should be concentrated on one side of the aircraft. The pilot's ability to satisfactorily perform this maneuver should be evaluated in the manner stated under paragraph (i) of this section.

(w) *Judgment.* The pilot should demonstrate judgment commensurate with experience required of a pilot in command of air carrier aircraft.

(x) *Emergency procedures.* The emergency procedures should be applicable to the type of aircraft being flown and in accordance with the emergency procedures prescribed by the air carrier. A record should be maintained in the pilot's file which will list the emergency procedures accomplished, date performed, and grade received.

(Published in 17 F. R. 8472, September 23, 1952, effective October 20, 1952.)

[41.53–7 *Requirements for approved training course—aircraft simulator (CAA rules which apply to sec. 41.53 (b)).*

[(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[9a] of the course. The application shall be prepared in looseleaf form, shall 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

[9a] The Administrator will review the training course, and if it is found adequate, will return an approved copy of the application to the applicant.

flight operations and the course[9b] shall incorporate at least the following subjects:

[(i) All of the required maneuvers in section 40.282 (b) (1) of this subchapter and section 41.53–6 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. 8997, November 9, 1957, effective November 25, 1957.)

[41.53–8 *Simulation requirements of aircraft simulators used in an approved training course (CAA policies which apply to sec. 41.53 (b)).* 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.
Deicing and anti-icing systems.
Oxygen system for the flight crew.]

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

41.54–1 *Flight time limitations for a crew of one or two pilots; 1 month (CAA interpretations which apply to sec. 41.54 (d)).* The term "in any 1 month" as used in section 41.54 (d) is interpreted as meaning a month of the calendar year commencing on the first day and ending on the last day thereof.

(Published in 15 F. R. 9232, December 23, 1950, effective upon publication in the Federal Register.)

41.54–2 *Flight time limitations for a crew of one or two pilots; 12-month period (CAA interpretations which apply to sec. 41.54 (e)).* The term "in any 12-month period" as used in section 41.54 (e) is interpreted as meaning any 12 consecutive months computed as any given day of any month to the day of the corresponding number of the same named month of the following or previous year.

Example: January 24, 1950, would extend to and include January 23, 1951.

(Published in 15 F. R. 9232, December 23, 1950, effective upon publication in the Federal Register.)

41.55–1 *Flight time limitations for a crew of two pilots and one additional flight crew member; 12-month period (CAA interpretations which apply to sec. 41.55 (d)).* The term "in any 12-month period" as used in section 41.55 (d) is interpreted as meaning any 12 consecutive months computed as any given day of any month to the day of the corresponding

[9b] 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.

number of the same named month of the following or previous year.

Example: January 24, 1950, would extend to and include January 23, 1951.

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41.56–1 *Flight time limitations for a crew of three or more pilots and an additional flight crew member; 12-month period (CAA interpretations which apply to sec. 41.56 (d)).* The term "in any 12-month period" as used in section 41.56 (d) is interpreted as meaning any 12 consecutive months computed as any given day of any month to the day of the corresponding number of the same named month of the following or previous year.

Example: January 24, 1950, would extend to and include January 23, 1951.

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41.63–1 *Emergency decisions (CAA interpretations which apply to sec. 41.63 (b) (1)).* The term "emergency situations," as used in this section, is interpreted to mean an unexpected occurrence or condition requiring immediate action to meet its danger. Under certain circumstances, an unexpected occurrence or condition might include icing conditions, engine or structural failure, weather conditions, danger of collision, etc. It is not intended that such an occurrence or condition must become critical before emergency authority is exercised. The pilot shall make a common sense evaluation of the factors and information available to him. If, after such an evaluation, he reasonably believes that an emergency exists or will be created, he is permitted to exercise his emergency authority and deviate from prescribed regulations and procedures to the extent required by considerations of safety.

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41.65–1 *Composition of flight crew (CAA rules which apply to sec. 41.65).*

(a) *General.* The minimum flight crew as determined by the Administrator, and specified in the air carrier operating certificate, shall be the type and number of flight crew members required on the flight deck for the operation of the aircraft over a particular route or route segment specified in the operating certificate. It is the responsibility of the air carrier to assign such additional flight crew members as necessary for compliance with flight time limitations and the performance of all required functions in accordance with section 41.65 (b).

(b) *Listing of flight crew members in the air carried operating certificate.* The minimum number of flight crew members serving in the capacity of pilots and the minimum number of flight crew members serving in the capacity of flight engineers required for duty on the flight deck of an aircraft as prescribed in sections 41.49–1 and 41.73–1 respectively are dependent on the type of aircraft authorized for use by the air carrier. As the minimum number of such crew members does not vary with the route or route segment over which the aircraft is flown, this shall be specified in the air carrier operating certificate on Form ACA–514a by the following provisions: "Flight crew members holding pilot and flight engineer certificates shall be those prescribed in sections 41.49–1 and 41.73–1."

The functional requirements of radiotelegraphy and celestial or other specialized means of navigation, as prescribed in sections 41.68–1 and 41.80–1, respectively, are dependent on the particular route or route segment over which the aircraft is flown. When a flight crew member is required to perform one of such functions on the flight deck of the aircraft over a route or route segment, this shall be specified in the air carrier operating certificate on Form ACA–514a by indicating the function required. This will be accomplished by the air carrier's inserting the letter "Y" on a line with the particular route or route segment under the required function; namely, radiotelegraphy—specialized means of navigation.

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