

*See correction*

## **Title 14—AERONAUTICS AND SPACE**

### **Chapter I—Federal Aviation Adminis- tration, Department of Transportation**

[Docket No. 9509; Amdt. Nos. 61-45; 121-55]

#### **PART 61—CERTIFICATION: PILOTS AND FLIGHT INSTRUCTORS**

#### **PART 121—CERTIFICATION AND OP- ERATIONS: DOMESTIC, FLAG, AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT**

##### **Training Programs**

The purpose of these amendments to Part 61 and Subparts N, O, and P of Part 121 is to update procedures for the approval and revision of training programs; to provide for more extensive use of airplane simulators in training; to allow improvements in the operation of training programs and the quality of training provided for crewmembers and dispatchers; and to generally clarify these requirements.

These amendments were originally proposed by Notice 69-14 and published in the FEDERAL REGISTER on April 4, 1969 (34 F.R. 6112). Numerous comments were received from all aspects of the industry, and essentially all were in agreement with the agency's purpose as stated

in the notice. There were, however, numerous specific comments that objected to particular items contained in Notice 69-14. The more significant of the comments received, and the disposition thereof, are discussed below as they apply to each section affected by these amendments. As a result of the comments received and the reexamination of its proposals, the FAA has made certain changes in the areas of section structure and clarification. In addition, certain changes have been made to ensure greater use of simulation equipment and use of the concept of training to a level of proficiency.

While the comments received were as varied as the groups and individuals who responded, certain general points emerged as the core of the objections and recommendations of the commentators. Some commentators stated that the extent to which the notice would permit use of flight simulation equipment and other training devices was so limited that it would impede the development of the agency's policy (as expressed in the fifth paragraph of the notice) and would fail to take full advantage of the current and potential development of simulation technology. Several commentators objected to what they believed was a requirement that the FAA must approve each training device and aid used in ground and flight training programs. Further, some commentators objected to what they believed was a disregard in the notice for the value of training to

(As published in the Federal Register  
/35 F.R. 84/ on January 2, 1970)

an individual level of proficiency, and the adherence to minimum hours as the basis for satisfactory completion of training phases. Finally, recommendations were made to clarify the language used in the notice and to improve the section format.

#### PART 61

*Section 61.147.* Several comments were received strongly objecting to the proposed changes to this section. Generally speaking, comments focused on the proposals in paragraphs (d) and (e) to base increased use of simulators for ATPC checking or type rating requirements on a mandatory requirement for completion of a line evaluation program. As indicated in the discussion of § 121.434, administrative difficulties would arise if this provision for a line evaluation program was adopted. Therefore, in recognition of these difficulties, paragraph (d) has been revised and paragraph (e) deleted to remove the requirement of line evaluation from the section.

In addition, the revision of paragraph (d) transfer the maneuvers and procedures requirements to revised Appendix A of Part 61. Also, Appendix A has been revised to clearly provide the requirements and authorizations for performing the flight check set forth in § 61.147 in a chart format similar to Appendix F of Part 121.

#### PART 121

##### SUBPART N

*Section 121.400.* Three commentators responded to this section specifically, and all were opposed to it as proposed in the notice. Two of these commentators objected to aircraft groupings based on the type and number of power-plants, but suggested that if airplane groupings must be retained, the groupings be reduced to basically two—propeller driven and turbojet. One commentator further objected to such groupings as a basis for determining training requirements with regard to content and minimum hours. The third commentator recommended that a seventh group be added to those proposed in the notice to include airplanes of the "Jumbo Jet" and "SST" category.

The airplane groups proposed in the notice evolved from the theory that regulatory requirements for minimum hours of training must necessarily be established for each airplane by make and type. Experience has shown that this theory is no longer sound and in light of the FAA's continuing study and as a result of comments received, the number of groups has been reduced to two—propeller driven including reciprocating and turboprop, and turbojet. Objections to the use of minimum hours as a criterion for satisfactory completion of the training program will be dealt with in connection with another section. In addition, for the purpose of clarity and in response to the recommendation of a commentator, § 121.400 will now list and define separately, key items used throughout Subparts N and O.

*Section 121.401.* One commentator objected to paragraph (a) (4) as proposed because he felt that the language em-

ployed inferred that simulator training courses were mandatory. This is not the case, and in order to prevent further misinterpretations, the word "permitted" is substituted for the word "required" in paragraph (a) (4).

Another comment objected to the language in the second sentence of paragraph (e) which applied the 20 percent failure restriction to the flight checks given at a "particular base of operation." This objection is well taken in light of the fact that the place of the flight check may be different from the place where the training was obtained due to the fact that the checks are frequently given where planes are available on layover. Because the purpose of the section is to further the goal of training to a level of proficiency, the base where the training is given is the crucial location for applying the 20 percent failure restriction and that is reflected in this amendment.

Comments were also received in regard to the use of the concept of minimum hours of training. As pointed out in the discussion of § 121.400 above, the concept of an absolute minimum number of hours as a criterion for determining the effectiveness of the certificate holder's training program is no longer appropriate. As indicated in the results of two industry experimental programs conducted under FAA exemptions, the current and anticipated use of simulation equipment makes reliance on minimum hours obsolete in most cases. Therefore, this amendment substitutes the words "programmed hours" for "minimum hours." Section 121.400(c) (5) provides the definition for "programmed hours" and as indicated ties the concept to the air carrier's showing to the Administrator that less than the number of hours specified for training is justified. It is believed that use of the word "programmed" more clearly describes the position of the FAA that any provision for hours should be flexible. The concept of "programmed hours" as used throughout Subparts N and O has previously been discussed in Amendment 121-7, effective August 16, 1965.

In addition, this amendment adds a paragraph to the section to deal with a high failure rate situation where "programmed hours" are not specified in connection with a simulator course of training to a level of proficiency as permitted in § 121.409(c). Wherever in the notice there appeared the words "minimum hours" or "required hours", the change to "programmed hours" has been made without further discussion.

Finally, it should be pointed out that wherever the word "inflight" is used in the requirements of Subparts N and O it refers to maneuvers, procedures, or checks that must be conducted in the airplane.

*Section 121.403.* One of the comments received with regard to this section objected to the language of paragraph (b) (2) which the commentator believed conveyed the impression that all of the items listed had to be individually approved. This was not the meaning the FAA intended to convey in the notice. To prevent further misunderstanding,

this amendment clarifies the section by revising paragraph (b) (2) to provide that the training devices listed in paragraph (b) (2) are all of those that the certificate holder intends to use in its program and with which it intends to support its application for approval of its training program. On the other hand, paragraph (b) (4) is intended to cover those simulators and other training devices which must be approved under § 121.407. If appropriate training requirements are approved based on certain of the devices or aids listed in the curriculum, the certificate holder will be required to use them in connection with all training conducted pursuant to that approval.

Comment was also received objecting to paragraph (b) (3). The commentator stated there was no justification for the inclusion of detailed descriptions or pictorial displays of the approved normal, abnormal, and emergency maneuvers, procedures, and functions inasmuch as this material appears in the FAA-approved flight manual or the certificate holder's operating manual. The justification for such a requirement is that it will help to standardize the certificate holder's training program, for it contemplates that the certificate holder will develop company policy concerning the details of performing the required maneuvers; and thereafter, provide appropriate instructions to all its flight instructors (including simulator instructors) and check airmen.

*Section 121.405.* Several comments were received addressed to this section, and those which were unfavorable objected to the proposed two-step approval process for training programs. One commentator stated that this approval process would defeat any possibility of attaining improved training methods in a reasonable length of time. It should be pointed out that the approval process of paragraph (a) is keyed to the provisions of paragraph (c) which require the certificate holder to show that the training conducted under the initial approval provisions of paragraph (b) insures that persons successfully completing the training program are adequately trained to perform their assigned duties. This requirement is the key to the concept of training to a level of proficiency, for it provides the certificate holder an opportunity to present to the Administrator, for approval, a training program which will be as effective as the certificate holder can make it.

Several commentators objected to the second sentence of proposed paragraph (d) (3) because they felt that a prohibition against allowing the Administrator to consider airplane simulators if the hours of flight training have been reduced under § 121.409(c) when permitting overall reductions in training hours, was too restrictive and contrary to the philosophy of the FAA as stated in the notice. Therefore, in light of these comments and to further the position of the agency relative to encouraging the use of simulation equipment, proposed paragraph (d) (3) has been deleted. Provisions covering credit for simulator programs relative to programmed hours,

which also embodies the concept of training to a level of proficiency, are found in revised §§ 121.409, 121.424, and 121.425 of this amendment.

One commentator recommended that the provision in proposed paragraph (d) authorizing the Administrator to permit reductions in the number of training hours should be restricted to the extent that the Administrator could only permit a 10-percent reduction. In support of this recommendation the commentator states that without this limitation, the paragraph could potentially be used as a basis to argue that hours of training should be reduced every time a new aid is utilized or when experience shows that more than 80 percent of the students have passed a training course. This recommendation is considered too restrictive and it would not further the objective of the agency to provide for the present and future development of effective and practical training programs.

Finally, one commentator expressed concern that this section would require training programs currently approved and in existence to be reapproved under the proposed approach in every instance. It was not the intent of the notice to propose such a requirement and programs or simulators approved under prior regulations would not automatically require reapproval. However, this section would apply to any future revisions to existing approved programs which occur after the effective date of this amendment.

**Section 121.407.** Several commentators recommended that Appendix B, compliance with which was one of the proposed criteria for simulator approval, be deleted. Present Appendix B to Part 121 is based essentially on the engineering flight test objectives of the airplane type certification requirements. Thus, a simulator that is adjusted to meet the provisions of Appendix B may not necessarily simulate the airplane realistically in the operating and performance flight regimes normally associated with flight training and flight checks. Furthermore, since the current technology of airplane simulation makes realism readily available in those flight regimes, the requirements of Appendix B now appear to be too inflexible for approval of airplane simulators that will be used in Part 121 training programs. Accordingly, upon further consideration of this matter, Appendix B is deleted by this amendment. However, concurrent with this amendment, the FAA is issuing an advisory circular which sets forth guidance to the certificate holder for obtaining approval of an airplane simulator that will be used in the certificate holder's training program.

As pointed out in the discussion of § 121.403, the intent of § 121.407 is to require simulators and other training devices to be individually approved only when they are used in training courses permitted under § 121.409, in checks required under Subpart O of this part or as permitted in Appendices E and F to this part.

Two commentators objected to proposed paragraph (a)(4) (adopted here-

in as (a)(3)) stating that modifications are generally minor in nature with regard to performance, functional, or other characteristics. However, it should be noted that if a particular simulator is approved to simulate a particular airplane type's characteristics, any modification to that airplane which changes those characteristics would require reevaluation by the FAA of the simulator with regard to the maneuvers and procedures affected. However, if, as this subparagraph contemplates, the simulator can be modified to conform with modifications to the airplane, then no new approval would be required. Therefore, the FAA deems this provision to be desirable in order to ensure that any significant modification to the airplane being simulated be adequately provided for.

Finally, it will be noted that the substance of proposed paragraph (b) has been consolidated with paragraph (a).

**Section 121.409.** In response to comments received, and in light of further FAA consideration, the agency has determined that paragraph (c) as proposed does not go far enough in furthering the goal of training to an individual level of proficiency. As stated by one commentator, there does not appear to be sufficient justification for an arbitrary reduction in hours of up to 25 percent. This view is supported by the results of the two industry experimental programs mentioned above. Therefore, paragraph (c) has been revised to provide that the programmed hours of flight training, otherwise applicable, do not apply when the certificate holder uses a course of training in an airplane simulator (or other training device in the case of flight engineers) and the pilot or flight engineer is trained to a predetermined level of proficiency as provided in §§ 121.424 and 121.425.

For the purpose of clarification, the words "other training devices" are substituted for "synthetic trainers" so that consistency among terms will be achieved throughout the subparts.

**Section 121.411.** Comments were received with regard to paragraph (b)(1) stating that the language indicated that in requiring a simulator instructor to hold an airline transport pilot certificate, the FAA would also be requiring him to hold a Class I medical certificate. As proposed, paragraph (b)(1) would not require a simulator instructor to hold a Class I medical certificate as these commentators believe, since the regulations do not require the holder of an ATR to hold a Class I medical certificate if he does not exercise the pilot privileges for which a Class I medical certificate is required.

The last sentence of paragraph (c) which prohibits a pilot check airman who was designated as such prior to March 28, 1969, from supervising a line evaluation program under § 61.147 is not being adopted, since the proposal for line evaluation in § 61.147 has been deleted.

**Section 121.413.** Several comments received with regard to this section stated that the use of simulation equipment was not furthered by the provisions therein. While the FAA agrees that a

change is required to permit greater use of simulation equipment in the training of check airmen and flight instructors, it is the position of the agency that paragraph (c)(1) should be retained as proposed in the notice, and that paragraphs (c)(2) and (3) be cited specifically as those requirements which may be met in an approved simulator. With regard to paragraph (c)(1), the FAA does not believe that the provision as proposed should be changed, because the check airman or flight instructor must be sufficiently trained in inflight training in the airplane so that he can adequately check or instruct on those aspects of training required to be performed in flight. Therefore, the amendment, through use of a flush paragraph at the end of paragraph (c), indicates that paragraphs (c)(2) and (3) may be complied with in an approved simulator.

In addition, the amendment changes the proposed section by revising the title and the provisions of the section to indicate that transition training as well as initial training is covered. Transition training as indicated in the notice and defined in § 121.400, is the training required to qualify a crewmember or dispatcher who has qualified and served in the same capacity in another airplane of the same group. As a practical matter, transition training represents the bulk of current training conducted by Part 121 certificate holders. Therefore, in this section and several others, reference to initial training will be revised to include transition training as well. This revision will be noted wherever it occurs in the balance of this amendment but will not be discussed further.

**Section 121.415.** Proposed § 121.415 was intended to establish the basic requirements for the various categories of training that the certificate holder must include in its approved training programs. However, the section was based on the assumption of the current rules that initial ground and flight training represented most of the essential air carrier training activity. As pointed out in the discussion of § 121.413, the above assumption is no longer valid, since the vast majority of training now involves transition and upgrade training. The FAA believes that because the section as proposed tended to be overly broad and generalized, misinterpretation and confusion was possible. Therefore, the section has been revised in order to clarify the requirements therein and to place the proper significance on transition training.

Specifically, the amendment sets forth the initial ground training (termed "basic indoctrination ground training") that must be provided for newly hired crewmembers and dispatchers. Also, certain specific training requirements proposed for this section, have been transferred to other sections which prescribe detailed requirements for specific training. In addition, the amendment clearly indicates that the section is, in part, in furtherance of the "show" provisions of § 121.405 by providing that subjects, maneuvers, or procedures may

be omitted, or programmed hours may be reduced, as provided in that section.

The FAA believes that the changes made to the proposed section give effect to several comments received which objected to the section as not contributing sufficiently to the concept of training to a level of proficiency, and as overly broad and generalized.

*Section 121.417.* A commentator stated that the language of proposed subparagraph (c) (2) implied that the evacuations contemplated were those conducted pursuant to Appendix D to Part 121, which is keyed to § 121.291. Accordingly, paragraph (c) (2) has been changed to read "Emergency evacuations", the intent being to remove the inference that Appendix D controls. In addition, one commentator stated that proposed paragraph (c) would not allow certificate holders to substitute video and audio aids, mock ups, or task simulators for the requirement that the listed emergency drills be performed by each crewmember. While the language of paragraph (c) states that demonstration may be substituted for performance, it is the position of the agency that this language would cover the devices the commentator mentioned, and allow certificate holders to utilize them in complying with the demonstration provision.

Other comments were received with regard to this section, but have not been adopted either because they are not sufficiently supported or because the FAA does not believe that they contribute to the purpose of the section to provide an in depth emergency training phase for all crewmembers.

*Section 121.418.* As part of the stated objective of this amendment to clarify the proposed regulations, the requirement for differences training, proposed to be placed in § 121.415, has been placed in this new section. With this change, § 121.415 will deal solely with the general flight and ground training requirements that must be included in the particular certificate holder's training program, and § 121.418 will cover only the general requirements for differences training.

*Section 121.419.* In response to several comments, and as indicated in the discussion of § 121.413, this section as proposed has been revised to include transition and upgrade ground training. In addition, the section has been changed to adopt the language "programmed hours" rather than merely "hours". Finally, the new airplane groups prescribed in § 121.400, have been reflected in this section with their appropriate programmed hours. These changes, considered desirable for purposes of clarification, apply in §§ 121.420, 121.421, and 121.422 dealing with flight navigator, flight attendant, and aircraft dispatcher ground training, respectively.

*Section 121.424.* As proposed, this section prescribed the specific details for flight training, taking those details from the current rule and Appendix E requirements. In line with this proposal, it was proposed to delete Appendix E. However, in light of several comments received

and due to further FAA study, this amendment has substantially revised this section for the purpose of clarity, to incorporate the concept of training to a level of proficiency, and to provide for greater use of simulators.

In addition, to other changes, this amendment retains Appendix E, but has revised its format and subject matter to include the specific requirements that were proposed for this section. This approach will result in a clearer indication of those maneuvers or procedures that may be performed in an airplane simulator, a training device, or a static airplane, as applicable.

*Section 121.425.* Both the comments and the changes made in regard to this section follow the same basic approach as in § 121.424. The same objectives sought for that section have been applied to this section as well in areas of clarification, use of airplane simulators and other training devices, and in providing for the concept of training to a level of proficiency.

Although it was recommended that paragraph (a) (2) (ii) be revised to delete the word "inflight" in order to permit the requirements therein to be performed in a simulator, the FAA believes that these elements of the flight check should be accomplished in the airplane in flight. However, it should be pointed out that the performance required may be demonstrated on training flights or other nonrevenue flights.

*Section 121.426.* To achieve greater clarity, the amendment has taken the requirements covering flight navigator initial and transition flight training out of § 121.415 as proposed, and placed them in this new section. This action is in accord with the objective stated in the revision of § 121.415 to limit that section to general requirements for the kinds of training that must be included in the particular training program. In addition, a new paragraph (b) (2) has been added to indicate that the flight training and checks required may be performed during Part 121 operations if under the supervision of a qualified flight navigator.

*Section 121.427.* As previously discussed, numerous comments were received objecting to the proposed airplane groups and, therefore, they have been revised. This section incorporates the revised groups prescribed in § 121.400. Those comments recommending a reduction in the number of programmed hours for recurrent ground training which were proposed have not been followed due to the fact that while these hours represent a minimum, they may be reduced in accordance with the "show" provisions of § 121.405. Therefore, if, in supporting its request for approval of a training program or a revision to a training program, the certificate holder can show that a reduction in hours is justified, it would not be bound by the hours prescribed. In the absence of such a showing, the FAA believes that these programmed hours of training must be met.

In addition, the requirements for pilot recurrent flight training have been amended to provide that the satisfactory

completion of a proficiency check may be substituted for recurrent flight training as permitted in § 121.433.

#### SUBPART O

*Section 121.432.* Comment was received with regard to this section objecting to the language of paragraph (d), the commentator stating that it appears that a certificate holder would be prevented from conducting a company check during operations under Part 121. In light of this objection, paragraph (d) has been amended to indicate that certificate holders may conduct additional checks or training in operations under Part 121 at a frequency greater than that required by the regulations on those items listed in subparagraphs (1) through (5) of paragraph (d).

In addition, the last sentence of paragraph (d) (5) has been set forth as a flush paragraph at the end of paragraph (d). This was the original intent, but a printer's error resulted in its being located in (d) (5) of the proposal.

Also, comment was received recommending that the language in paragraph (c) be deleted and replaced with language currently appearing in § 121.437(e). However, it should be pointed out that § 121.437 deals only with the requirement of a certificate as part of pilot in command qualification. The language of paragraph (c) of proposed § 121.433 is intended to cover broader qualification requirements for one filling a position as second in command of an operation that requires three or more pilots and thus is not limited to one particular aspect of qualification as is § 121.437.

Finally, it will be noted that the airplane groups in paragraph (e) have been revised in accordance with § 121.400.

*Section 121.433.* Comments were received recommending that we delete, revise, or clarify paragraph (a) (1) which provides that a second in command pilot may, if properly qualified as a pilot in command, serve as a pilot in command. One commentator stated that the language in paragraph (a) (1) could be interpreted to mean that it was an alternative to the requirements of paragraph (a) (2). In addition, two commentators stated that the requirement that before a second in command who was qualified to act as pilot in command, could so act, he must have had pilot in command recurrent training within the preceding 30 days, was too restrictive.

The FAA agrees that this section should be changed for purposes of clarity, and, therefore, paragraph (a) (1) has been deleted and its requirements placed in other paragraphs of the section.

In addition, for purposes of clarity, the current requirement that a pilot in command must complete a proficiency check or recurrent flight training within the preceding 12 calendar months in each airplane in which he serves as pilot in command has been placed in a new paragraph (d). Also, paragraph (c) has been revised to clear up ambiguities concerning recurrent training.

*Section 121.434.* Although only a few comments were received concerning this

section, the section has been significantly revised in light of the FAA's reconsideration of the provisions and language used therein.

Inasmuch as the concept of line evaluation has been deleted throughout Subparts N and O of Part 121 and in § 61.147, the deletion is made in this section as well. This deletion is necessary due to administrative problems that require further study. In addition, the section has been revised to require the pilot in command to hold the appropriate pilot in command certificates and ratings before he performs the line experience. This change is necessary due to the deletion of the requirements of line evaluation discussed above. Thus, this section, prohibits the pilot from serving as pilot in command in operations under Part 121 until all training requirements needed to serve in that position have been satisfactorily completed. Also, the section has been further revised to require the pilot to be observed by an FAA inspector during at least one flight leg of the operating experience that includes a takeoff and landing if the certificate holder uses a course of training in an airplane simulator as provided in § 121.409(c). While this requirement is limited to the situation where the certificate holder utilizes a course of training in an airplane simulator as provided in § 121.409(c), the FAA will continue to follow its current practice of observing other pilot applicants when possible. In addition, the agency has been considering the feasibility of expanding efforts in this area, and in the near future will issue a notice of proposed rule making proposing to make the observation requirement applicable to all pilot applicants.

**Section 121.440.** Comment was received questioning the language in paragraph (b)(1) which was unclear as to whether the pilot check airman must be currently qualified on the route and airplane. The commentator cited the situation where a certificate holder would want to use an individual who was over 60 years old as a pilot check airman to conduct line checks. While the intent of the subparagraph is to require the check airman to be currently qualified both on the route and in the airplane, he can retain his qualification by meeting the currency requirements applicable to him, none of which require, or permit, him to act as a required flight crewmember. Thus, in the case of a person who is over 60 or the person who holds a Class III medical certificate, the regulations permit him to serve as pilot check airman, although he may not serve as a required flight crewmember.

The language of this section has been revised to more clearly indicate that a pilot check airman must be currently qualified on both the route and the airplane.

**Section 121.441.** Two commentators objected to the flush paragraph at the end of paragraph (a), which proposed that before a type rating flight check

could be used in lieu of a proficiency check, Item V(d) must be performed in accordance with Appendix F of this part. Upon reexamination of this proposal, the FAA has determined that this provision is neither necessary nor consistent with the overall objectives set forth in the notice. Accordingly, it has been deleted.

In addition, comment was received recommending that paragraph (f) be clarified because the language used indicated that a line check could be substituted for a proficiency check in meeting the requirements of this section. While such a meaning was not intended, in light of other revisions made by this amendment the paragraph is unnecessary and has been deleted.

In addition to the revisions discussed above with regard to specific sections of Subparts N and O of Part 121, revisions have also been made to the appendices. As discussed previously, Appendix B has been deleted, and Appendix E, proposed to be deleted in the notice, has been retained and revised with a new chart format. These changes were made for purposes of clarity, and the FAA believes they serve to clear up much of the confusion reflected in comments received.

Furthermore, Appendix F to Part 121 has been revised through use of a chart format. Again, the FAA believes this revision will help achieve greater clarity throughout the subparts. Several comments were received concerning Appendix F and dealt with proposed Items I(b), concerning preflight inspection, II(d), concerning powerplant failure, III(c), concerning ILS and other missed approaches, III(d), concerning circling approaches, and III(e), concerning instrument approaches. All of these comments were considered; however, the FAA believes that the present state of the art involving all Part 121 certificate holders is not so advanced as to permit, at this time, adoption of the substantive changes recommended by the commentators.

In making the revisions set forth in this amendment, the FAA has sought to give effect to the broad objectives stated in the notice and reiterated in this preamble. The proposals set forth in the notice and the revisions herein are considered by the FAA to be the maximum possible at this time in light of the state of the art as applicable to all Part 121 certificate holders. The FAA is well aware of the rapid technological advancements which have been made, and will be made in the future in aviation generally, and in simulation equipment specifically. In keeping with this advancement, the FAA will continue to explore all possibilities for translating the new technology into effective regulations to permit the safest and most efficient training programs possible.

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

In consideration of the foregoing, Parts 61 and 121 of the Federal Aviation

Regulations are amended, effective February 2, 1970, as follows:

1. By inserting a new paragraph (d) in § 61.147 to read as follows:

§ 61.147 Airplane rating: aeronautical skill.

(d) The items specified in paragraph (a) of this section may be performed in the airplane simulator or other training device specified in Appendix A to this part for the particular item if—

(1) The airplane simulator or other training device meets the requirements of § 121.407 of this chapter; and

(2) In the case of the items preceded by an asterisk (\*) in Appendix A, the applicant has successfully completed the training set forth in § 121.424(d) of this chapter.

However, the FAA inspector or designated examiner may require Items II(d), V(f), or V(g) of Appendix A to this part to be performed in the airplane if he determines that action is necessary to determine the applicant's competence with respect to that maneuver.

2. By amending Appendix A to Part 61 to read as follows:

#### APPENDIX A

##### PRACTICAL TEST REQUIREMENTS FOR AIRLINE TRANSPORT PILOT CERTIFICATES AND ASSOCIATED CLASS AND TYPE RATINGS

Throughout the maneuvers prescribed in this appendix, good judgment commensurate with a high level of safety must be demonstrated. In determining whether such judgment has been shown, the FAA inspector or designated examiner who conducts the check considers adherence to approved procedures, actions based on analysis of situations for which there is no prescribed procedure or recommended practice, and qualities of prudence and care in selecting a course of action.

Each maneuver or procedure must be performed inflight except to the extent that certain maneuvers or procedures may be performed in an airplane simulator with a visual system (visual simulator) or an airplane simulator without a visual system (nonvisual simulator) or may be waived as indicated by an X in the appropriate columns. A maneuver authorized to be performed in a nonvisual simulator may be performed in a visual simulator, and a maneuver authorized to be performed in a training device may be performed in a non-visual or a visual simulator.

An asterisk (\*) preceding a maneuver or procedure indicates that the maneuver or procedure may be performed in an airplane simulator or other training device as indicated, provided the applicant has successfully completed the training set forth in § 121.424(d) of this chapter.

When a maneuver or procedure is preceded by this symbol (#), it indicates that the FAA inspector or designated examiner may require the maneuver or procedure to be performed in the airplane if he determines such action is necessary to determine the applicant's competence with respect to that maneuver.

An X and asterisk (X\*) indicates that a particular condition is specified in connection with the maneuver, procedure, or waiver provisions.

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Nonvisual simulator	Training device	Waiver provisions of § 61.147(c)
<p>The procedures and maneuvers set forth in this appendix must be performed in a manner that satisfactorily demonstrates knowledge and skill with respect to—</p> <p>(1) The airplane, its systems and components;</p> <p>(2) Proper control of airspeed, configuration, direction, altitude, and attitude in accordance with procedures and limitations contained in the approved Airplane Flight Manual, check lists, or other approved material appropriate to the airplane type; and</p> <p>(3) Compliance with approved en route, instrument approach, missed approach, ATC, or other applicable procedures.</p> <p><b>I. Preflight:</b></p> <p>(a) Equipment examination (oral). As part of the practical test the equipment examination must be closely coordinated with and related to, the flight maneuvers portion but may not be given during the flight maneuvers portion. Notwithstanding § 61.21 the equipment examination may be given to an applicant who has completed a ground school that is part of an approved training program under Federal Aviation Regulations Part 121 for the airplane type involved and who is recommended by his instructor. The equipment examination must be repeated if the flight maneuvers portion is not satisfactorily completed within 60 days. The equipment examination must cover—</p> <p>(1) Subjects requiring a practical knowledge of the airplane, its powerplants, systems, components, operational, and performance factors;</p> <p>(2) Normal, abnormal, and emergency procedures, and the operations and limitations relating thereto; and</p> <p>(3) The appropriate provisions of the approved Airplane Flight Manual.</p> <p>(b) Preflight inspection. The pilot must—</p> <p>(1) Conduct an actual visual inspection of the exterior and interior of the airplane, locating each item and explaining briefly the purpose of inspecting it; and</p> <p>(2) Demonstrate the use of the prestart check list, appropriate control system checks, starting procedures, radio and electronic equipment checks, and the selection of proper navigation and communications radio facilities and frequencies prior to flight.</p> <p>If a flight engineer is a required crewmember for the particular type airplane, the actual visual inspection may either be waived or it may be replaced by using an approved pictorial means that realistically portrays the location and detail of inspection items.</p> <p>(c) Taxiing. This maneuver includes taxiing, sailing, or docking procedures in compliance with instructions issued by the appropriate traffic control authority or by the FAA inspector or designated examiner.</p> <p>(d) Powerplant checks. As appropriate to the airplane type.</p> <p><b>II. Takeoffs:</b></p> <p>(a) Normal. One normal takeoff which, for the purpose of this maneuver, begins when the airplane is taxied into position on the runway to be used.</p> <p>(b) Instrument. One takeoff with instrument conditions simulated at or before reaching an altitude of 100 feet above the airport elevation.</p> <p>(c) Cross wind. One cross wind takeoff, if practical under the existing meteorological, airport, and traffic conditions.</p> <p>(d) Powerplant failure. One takeoff with a simulated failure of the most critical powerplant—</p> <p>(1) At the point after <math>V_1</math> and before <math>V_2</math> that in the judgment of the FAA inspector or designated examiner is appropriate to the airplane type under the prevailing conditions;</p> <p>(2) At a point as close as possible after <math>V_1</math> when <math>V_1</math> and <math>V_2</math> (or <math>V_1</math> and <math>V_3</math>) are identical; or</p> <p>(3) At the appropriate speed for nontransport category airplanes.</p> <p>(e) Rejected. A rejected takeoff performed in an airplane during a normal takeoff run after reaching a reasonable speed determined by giving due consideration to aircraft characteristics, runway length, surface conditions, wind direction and velocity, brake heat energy, and any other pertinent factors that may adversely affect safety or the airplane.</p>						
					X	
				X		X*
				X		
	X		X			
		X*				
			X			
				X		X*

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Nonvisual simulator	Training device	Waiver provisions of § 61.147(c)
<p><b>III. Instrument Procedures:</b></p> <p>* (a) Area departure and area arrival. During each of these maneuvers the applicant must—</p> <p>(1) Adhere to actual or simulated ATC clearances (including assigned radials); and</p> <p>(2) Properly use available navigation facilities.</p> <p>Either area arrival or area departure, but not both, may be waived under § 61.147(c).</p> <p>* (b) Holding. This maneuver includes entering, maintaining, and leaving holding patterns. It may be performed under either area departure or area arrival.</p> <p>(c) ILS and other instrument approaches. There must be the following:</p> <p>(1) At least one normal ILS approach.</p> <p>(2) At least one manually controlled ILS approach with a simulated failure of one powerplant. The simulated failure should occur before initiating the final approach course and must continue to touchdown or through the missed approach procedure.</p> <p>(3) At least one nonprecision approach procedure that is representative of the nonprecision approach procedures that the applicant is likely to use.</p> <p>(4) Demonstration of at least one nonprecision approach procedure on a letdown aid other than the approach procedure performed under subparagraph (3) of this paragraph that the applicant is likely to use. If performed in a synthetic instrument trainer, the procedures must be observed by the FAA inspector or designated examiner, or if the applicant has completed an approved training course under Part 121 of this chapter for the airplane type involved, the procedures may be observed by a person qualified to act as an instructor or check airman under that approved training program.</p> <p>Each instrument approach must be performed according to any procedures and limitations approved for the approach facility used. The instrument approach begins when the airplane is over the initial approach fix for the approach procedure being used (or turned over to the final approach controller in the case of GCA approach) and ends when the airplane touches down on the runway or when transition to a missed approach configuration is completed. Instrument conditions need not be simulated below 100' above touchdown zone elevation.</p> <p>(d) Circling approaches. At least one circling approach must be made under the following conditions:</p> <p>(1) The portion of the circling approach to the authorized minimum circling approach altitude must be made under simulated instrument conditions.</p> <p>(2) The approach must be made to the authorized minimum circling approach altitude followed by a change in heading and the necessary maneuvering (by visual reference) to maintain a flight path that permits a normal landing on a runway at least 90° from the final approach course of the simulated instrument portion of the approach.</p> <p>(3) The circling approach must be performed without excessive maneuvering, and without exceeding the normal operating limits of the airplane. The angle of bank should not exceed 30°.</p> <p>When the maneuver is performed in an airplane, it may be waived as provided in § 61.147(c) if local conditions beyond the control of the pilot prohibit the maneuver or prevent it from being performed as required.</p> <p>* (e) Missed approaches. Each applicant must perform at least two missed approaches, with at least one missed approach from an ILS approach. A complete approved missed approach procedure must be accomplished at least once and, at the discretion of the FAA inspector or designated examiner, a simulated powerplant failure may be required during any of the missed approaches. These maneuvers may be performed either independently or in conjunction with maneuvers required under sections III or V of this appendix. At least one must be performed inflight.</p>	X		X			X*
	X		X			X*
	X	X	X			
	X		X			
	X				X	
			X			X*
	X					
	X	X*	X*			

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Nonvisual simulator	Training device	Waiver provisions of § 61.147(c)
IV. Inflight Maneuvers:						
(a) Steep turns. At least one steep turn in each direction must be performed. Each steep turn must involve a bank angle of 45° with a heading change of at least 180° but not more than 360°.	X			X		X
(b) Approaches to stalls. For the purpose of this maneuver the required approach to a stall is reached when there is a perceptible buffet or other response to the initial stall entry. Except as provided below, there must be at least three approaches to stalls as follows:	X			X		X*
(1) One must be in the takeoff configuration (except where the airplane uses only a zero-flap takeoff configuration).						
(2) One in a clean configuration.						
(3) One in a landing configuration.						
At the discretion of the FAA inspector or designated examiner, one approach to a stall must be performed in one of the above configurations while in a turn with a bank angle between 15° and 30°. Two out of the three approaches required by this paragraph may be waived as provided in § 61.147(c).						
(c) Specific flight characteristics. Recovery from specific flight characteristics that are peculiar to the airplane type.				X		X
(d) Powerplant failures. In addition to the specific requirements for maneuvers with simulated powerplant failures, the FAA inspector or designated examiner may require a simulated powerplant failure at any time during the check.		X				
V. Landings and Approaches to Landings:						
Notwithstanding the authorizations for combining of maneuvers and for waiver of maneuvers, at least three actual landings (one to a full stop), must be made. These landings must include the types listed below but more than one type can be combined where appropriate:						
(a) Normal landing.		X				
(b) Landing in sequence from an ILS instrument approach except that if circumstances beyond the control of the pilot prevent an actual landing, the FAA inspector or designated examiner may accept an approach to a point where, in his judgment, a landing to a full stop could have been made.		X*				
(c) Cross wind landing, if practical under existing meteorological, airport, and traffic conditions.		X*				
(d) Maneuvering to a landing with simulated failure of 50% of the available powerplants. The simulated loss of power must be on one side of the airplane (center and one outboard engine on three-engine airplanes), except that in turbojet powered airplanes, the maneuvers following may be substituted for this requirement:		X*				
(1) In the case of a four-engine turbojet powered airplane, maneuvering to a landing with simulated failure of the most critical powerplant, if a flight instructor in an approved training program under Part 121 of this chapter certifies to the Administrator that he has observed the applicant satisfactorily perform a landing in that type airplane with simulated failure of 50% of the available powerplants. However, these substitute maneuvers may not be used if the Administrator determines that training in the two-engine out landing maneuver provided in the training program is unsatisfactory.		X				
(2) In the case of a three-engine airplane, maneuvering to a landing using an approved procedure that approximates the loss of two powerplants.						
(e) Landing under simulated circling approach conditions, except that if circumstances beyond the control of the pilot prevent a landing, the FAA inspector or designated examiner may accept an approach to a point where, in his judgment, a landing to a full stop could have been made.			X*			
(f) A rejected landing, including a normal missed approach procedure, that is rejected approximately 50' over the runway and approximately over the runway threshold. This maneuver may be combined with instrument, circling, or missed approach procedures, but instrument conditions need not be simulated below 100' above the runway.	X*		X*			
(g) A no flap visual approach to a point where, in the judgment of the FAA inspector or designated examiner, a landing to a full stop on the appropriate runway could be made.			X*			

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Nonvisual simulator	Training device	Waiver provisions of § 61.147(c)
(b) For a single powerplant rating only, unless the applicant holds a commercial pilot certificate, he must accomplish accuracy approaches and spot landings that include a series of three landings from an altitude of 1,000' or less, with the engine throttled and 180° change in direction. The airplane must touch the ground in a normal landing attitude beyond and within 200' from a designated line. At least one landing must be from a forward slip. One hundred eighty degree approaches using two 90° turns with a straight base leg are preferred although circular approaches are acceptable.		X				
VI. Normal and Abnormal Procedures. Each applicant must demonstrate the proper use of as many of the systems and devices listed below as the FAA inspector or designated examiner finds are necessary to determine that the person being checked has a practical knowledge of the use of the systems and devices appropriate to the aircraft type:						
(a) Anti-icing and deicing systems.				X		
(b) Auto-pilot systems.				X		
(c) Automatic or other approach aid systems.				X		
(d) Stall warning devices, stall avoidance devices, and stability augmentation devices.				X		
(e) Airborne radar devices.				X		
(f) Any other systems, devices, or aids available.				X		
(g) Hydraulic and electrical system failures and malfunctions.				X		
(h) Landing gear and flap systems failures or malfunctions.				X		
(i) Failure of navigation or communications equipment.				X		
VII. Emergency Procedures. Each applicant must demonstrate the proper emergency procedures for as many of the emergency situations listed below as the FAA inspector or designated examiner finds are necessary to determine that the person being checked has an adequate knowledge of, and ability to perform, such procedures:						
(a) Fire inflight.				X		
(b) Smoke control.				X		
(c) Rapid decompression.				X		
(d) Emergency descent.				X		
(e) Any other emergency procedures outlined in the appropriate approved airplane flight manual.				X		

3. By amending Subpart N of Part 121 to read as follows:

#### Subpart N—Crewmember and Aircraft Dispatcher Training Program

§ 121.400 Applicability and terms used.

(a) This subpart prescribes the requirements applicable to each certificate holder for establishing and maintaining a training program for crewmembers and aircraft dispatchers and for approval and use of training devices in the conduct of the program.

(b) For the purpose of this subpart, airplane groups are as follows:

(1) Group I. Propeller driven, including—

(i) Reciprocating powered; and

(ii) Turbopropeller powered.

(2) Group II. Turbojet powered.

(c) For the purpose of this subpart, the following terms and definitions apply:

(1) Initial training. The training required for crewmembers and dispatchers who have not qualified and served in the same capacity on another airplane of the same group.

(2) Transition training. The training required for crewmembers and dispatchers who have qualified and served in the same capacity on another airplane of the same group.

(3) Upgrade training. The training required for crewmembers who have qualified and served as second in command



or flight engineer on a particular airplane type, before they serve as pilot in command or second in command, respectively, on that airplane.

(4) *Differences training.* The training required for crewmembers and dispatchers who have qualified and served on a particular type airplane, when the Administrator finds differences training is necessary before a crewmember serves in the same capacity on a particular variation of that airplane.

(5) *Programmed hours.* The hours of training prescribed in this subpart which may be reduced by the Administrator upon a showing by the certificate holder that circumstances justify a lesser amount.

(6) *Inflight.* Refers to maneuvers, procedures, or checks that must be conducted in the airplane.

#### § 121.401 Training program: General.

(a) Each certificate holder shall—

(1) Establish, obtain the appropriate initial and final approval of, and provide, a training program that meets the requirements of this subpart and Appendices E and F and that insures that each crewmember, aircraft dispatcher, flight instructor and check airman is adequately trained to perform his assigned duties;

(2) Provide adequate ground and flight training facilities and properly qualified ground instructors for the training required by this subpart;

(3) Provide and keep current with respect to each airplane type and, if applicable, the particular variations within that airplane type, appropriate training material, examinations, forms, instructions, and procedures for use in conducting the training and checks required by this part; and

(4) Provide enough flight instructors, check airmen, and simulator instructors to conduct required flight training and flight checks, and simulator training courses permitted under this part.

(b) Whenever a crewmember or aircraft dispatcher who is required to take recurrent training, a flight check, or a competence check, takes the check or completes the training in the calendar month before or after the calendar month in which that training or check is required, he is considered to have taken or completed it in the calendar month in which it was required.

(c) Each instructor, supervisor, or check airman who is responsible for a particular ground training subject, segment of flight training, course of training, flight check, or competence check under this part shall certify as to the proficiency and knowledge of the crewmember, aircraft dispatcher, flight instructor, or check airman concerned upon completion of that training or check. That certification shall be made a part of the crewmember's or dispatcher's record.

(d) Training subjects that are applicable to more than one airplane or crewmember position and that have been satisfactorily completed in connection with prior training for another airplane or another crewmember position, need

not be repeated during subsequent training other than recurrent training.

(e) A person who progresses successfully through flight training, is recommended by his instructor or a check airman, and successfully completes the appropriate flight check for a check airman or the Administrator, need not complete the programmed hours of flight training for the particular airplane. However, whenever the Administrator finds that 20 percent of the flight checks given at a particular training base during the previous 6 months under this paragraph are unsuccessful, this paragraph may not be used by the certificate holder at that base until the Administrator finds that the effectiveness of the flight training there has improved.

In the case of a certificate holder using a course of training permitted in § 121.409(c), the Administrator may require the programmed hours of inflight training in whole or in part, until he finds the effectiveness of the flight training has improved as provided in paragraph (e) of this section.

#### § 121.403 Training program: Curriculum.

(a) Each certificate holder must prepare and keep current a written training program curriculum for each type of airplane with respect to dispatchers and each crewmember required for that type airplane. The curriculum must include ground and flight training required by this subpart.

(b) Each training program curriculum must include:

(1) A list of principal ground training subjects, including emergency training subjects, that are provided.

(2) A list of all the training devices, mockups, systems trainers, procedures trainers, or other training aids that the certificate holder will use.

(3) Detailed descriptions or pictorial displays of the approved normal, abnormal, and emergency maneuvers, procedures and functions that will be performed during each flight training phase or flight check, indicating those maneuvers, procedures and functions that are to be performed during the inflight portions of flight training and flight checks.

(4) A list of airplane simulators or other training devices approved under § 121.407, including approvals for particular maneuvers, procedures, or functions.

(5) The programmed hours of training that will be applied to each phase of training.

(6) A copy of each statement issued by the Administrator under § 121.405(d) for reduction of programmed hours of training.

#### § 121.405 Training program and revision: Initial and final approval.

(a) To obtain initial and final approval of a training program, or a revision to an approved training program, each certificate holder must submit to the Administrator—

(1) An outline of the proposed program or revision, including an outline of the proposed or revised curriculum, that provides enough information for a pre-

liminary evaluation of the proposed training program or revised training program; and

(2) Additional relevant information as may be requested by the Administrator.

(b) If the proposed training program or revision complies with this subpart, the Administrator grants initial approval in writing after which the certificate holder may conduct the training in accordance with that program. The Administrator then evaluates the effectiveness of the training program and advises the certificate holder of deficiencies, if any, that must be corrected.

(c) The Administrator grants final approval of the training program or revision if the certificate holder shows that the training conducted under the initial approval set forth in paragraph (b) of this section ensures that each person that successfully completes the training is adequately trained to perform his assigned duties.

(d) In granting initial and final approval of training programs or revisions, including reductions in programmed hours specified in this subpart, the Administrator considers the training aids, devices, methods, and procedures listed in the certificate holder's curriculum as set forth in § 121.403 that increase the quality and effectiveness of the teaching-learning process.

If approval of reduced programmed hours of training is granted, the Administrator provides the certificate holder with a statement of the basis for the approval.

(e) Whenever the Administrator finds that revisions are necessary for the continued adequacy of a training program that has been granted final approval, the certificate holder shall, after notification by the Administrator, make any changes in the program that are found necessary by the Administrator. Within 30 days after the certificate holder receives such notice, it may file a petition to reconsider the notice with the FAA Air Carrier District Office charged with the overall inspection of the certificate holder's operations. The filing of a petition to reconsider stays the notice pending a decision by the Administrator. However, if the Administrator finds that there is an emergency that requires immediate action in the interest of safety in air transportation, he may, upon a statement of the reasons, require a change effective without stay.

#### § 121.407 Training program: Approval of airplane simulators and other training devices.

(a) Each airplane simulator and other training device that is used in a training course permitted under § 121.409, in checks required under Subpart O of this part or as permitted in Appendices E and F to this part must:

(1) Be specifically approved for—

(i) The certificate holder;

(ii) The type airplane and, if applicable, the particular variation within type, for which the training or check is being conducted; and

(iii) The particular maneuver, procedure, or crewmember function involved.



(2) Maintain the performance, functional, and other characteristics that are required for approval.

(3) Be modified to conform with any modification to the airplane being simulated that results in changes to performance, functional, or other characteristics required for approval.

(4) Be given a daily functional pre-flight check before being used.

(5) Have a daily discrepancy log kept with each discrepancy entered in that log by the appropriate instructor or check airman at the end of each training or check flight.

(b) A particular airplane simulator or other training device may be approved for use by more than one certificate holder.

§ 121.409 Training courses using airplane simulators and other training devices.

(a) Training courses utilizing airplane simulators and other training devices may be included in the certificate holder's approved training program for use as provided in this section.

(b) A course of training in an airplane simulator may be included for use as provided in § 121.441 if that course—

(1) Provides at least 4 hours of training at the pilot controls of an airplane simulator as well as a proper briefing before and after the training;

(2) Provides training in at least the procedures and maneuvers set forth in Appendix F to this part; and

(3) Is given by an instructor who meets the applicable requirements of § 121.411.

The satisfactory completion of the course of training must be certified by either the Administrator or a qualified check airman.

(c) The programmed hours of flight training set forth in this subpart do not apply if the training program for the airplane type includes—

(1) A course of pilot training and a flight check in an airplane simulator as provided in § 121.424(d); or

(2) A course of flight engineer training and a flight check in an airplane simulator or other training device as provided in § 121.425(c).

§ 121.411 Training program: Check airman and instructor qualifications.

(a) No certificate holder may use a person nor may any person serve as a flight instructor or check airman in a training program established under this subpart unless, with respect to the particular airplane type involved, that person—

(1) Holds the airman certificates and ratings that must be held in order to serve as a pilot in command, a flight engineer, or a flight navigator, as appropriate, in operations under this part;

(2) Has satisfactorily completed the appropriate training phases for the airplane, including recurrent training, that are required in order to serve as a pilot in command, flight engineer, or flight navigator in operations under this part;

(3) Has satisfactorily completed the appropriate proficiency or competence checks that are required in order to serve

as a pilot in command, flight engineer, or flight navigator in operations under this part;

(4) Has satisfactorily completed the applicable training requirements of § 121.413;

(5) In the case of a check airman, has been approved for the airplane and the check airman duties involved; and

(6) Holds at least a Class III medical certificate. However, pilot check airmen who have passed their 60th birthday or check airmen who do not hold an appropriate medical certificate may not serve as a flight crewmember in operations under this part.

(b) No certificate holder may use a person nor may any person serve as a simulator instructor for a course of training given in an airplane simulator as provided in § 121.409(b) unless that person—

(1) Holds an airline transport pilot certificate; and

(2) Has satisfactorily completed for a check airman or for the Administrator—

(i) Appropriate initial pilot ground training and ground training for a flight instructor as provided in § 121.413; and

(ii) A simulator flight training course in the type airplane simulator in which that person instructs as provided by § 121.409(c).

(c) Notwithstanding paragraphs (a) and (b) of this section, a person who was designated as a check airman, a flight instructor, or a simulator instructor before December 22, 1969, may continue to serve as such, with respect to the particular type airplane involved, without completing the training specified in § 121.413.

§ 121.413 Check airmen and flight instructors: Initial and transition training.

(a) The initial and transition ground training for pilot check airmen must include the following:

(1) Pilot check airman duties, functions, and responsibilities.

(2) The applicable Federal Aviation Regulations and the certificate holder's policy and procedures.

(3) The appropriate methods, procedures, and techniques for conducting the required checks.

(4) Proper evaluation of pilot performance including the detection of—

(i) Improper and insufficient training; and

(ii) Personal characteristics that could adversely affect safety.

(5) The appropriate corrective action in the case of unsatisfactory checks.

(6) The approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the airplane.

(b) The initial and transition ground training for pilot flight instructors must include the following:

(1) The fundamental principles of the teaching-learning process.

(2) Teaching methods and procedures.

(3) The instructor-student relationship.

However, subparagraphs (1), (2), and (3) are not required for the holder of a flight instructor certificate.

(c) The initial and transition flight training for pilot check airmen and pilot flight instructors must include the following:

(1) Enough inflight training and practice in conducting flight checks from the left and right pilot seats in the required normal, abnormal, and emergency maneuvers to insure his competence to conduct the pilot flight checks and flight training required by this part.

(2) The appropriate safety measures to be taken from either pilot seat for emergency situations that are likely to develop in training.

(3) The potential results of improper or untimely safety measures during training.

The requirements of subparagraphs (2) and (3) may be accomplished inflight or in an approved simulator.

(d) The initial and transition ground and flight training for flight engineer and flight navigator flight instructors and check airmen must be adequate to insure competence to perform their assigned duties.

§ 121.415 Crewmember and dispatcher training requirements.

(a) Each training program must provide the following initial and transition ground training as appropriate to the particular assignment of the crewmember or dispatcher:

(1) Basic indoctrination ground training for newly hired crewmembers or dispatchers including instruction in at least the following—

(i) Duties and responsibilities of crewmembers or dispatchers, as applicable;

(ii) Appropriate provisions of the Federal Aviation Regulations;

(iii) Contents of the certificate holder's operating certificate and operations specifications (not required for flight attendants); and

(iv) Appropriate portions of the certificate holder's operating manual.

(2) The initial and transition ground training specified in §§ 121.419 through 121.422, as applicable.

(3) Emergency training as specified in § 121.417 (not required for dispatchers).

Basic indoctrination ground training must consist of at least 40 programmed hours of instruction in the applicable subjects specified in paragraph (a) of this section unless reduced under § 121.405 or as specified in § 121.401(d).

(b) Each training program must provide the initial and transition flight training specified in §§ 121.424 through 121.426, as applicable.

(c) Each training program must provide recurrent ground and flight training as provided in § 121.427.

(d) Each training program must provide the differences training specified in § 121.418 if the Administrator finds that, due to differences between airplanes of the same type operated by the certificate holder, additional training is necessary to insure that each crewmember and dispatcher is adequately trained to perform his assigned duties.

(e) Upgrade training as specified in §§ 121.419 and 121.424 for a particular type airplane may be included in the

training program for crewmembers who have qualified and served as second in command pilot or flight engineer on that airplane.

(f) Particular subjects, maneuvers, procedures, or parts thereof specified in §§ 121.419 through 121.425 for transition or upgrade training, as applicable, may be omitted, or the programmed hours of ground instruction or inflight training may be reduced, as provided in § 121.405.

(g) In addition to initial, transition, upgrade, recurrent and differences training, each training program must also provide ground and flight training, instruction, and practice as necessary to insure that each crewmember and dispatcher—

(1) Remains adequately trained and currently proficient with respect to each airplane, crewmember position, and type of operation in which he serves; and

(2) Qualifies in new equipment, facilities, procedures, and techniques, including modifications to airplanes.

#### § 121.417 Crewmember emergency training.

(a) Each training program must provide the emergency training set forth in this section with respect to each airplane type, model, and configuration, each required crewmember, and each kind of operation conducted, insofar as appropriate for each crewmember and the certificate holder.

(b) Emergency training must provide the following:

(1) Instruction in emergency assignments and procedures, including coordination among crewmembers.

(2) Individual instruction in the location, function, and operation of emergency equipment including—

(i) Equipment used in ditching and evacuation;

(ii) First aid equipment and its proper use; and

(iii) Portable fire extinguishers, with emphasis on type of extinguisher to be used on different classes of fires.

(3) Instruction in the handling of emergency situations including—

(i) Rapid decompression;

(ii) Fire in flight or on the surface;

(iii) Ditching and other evacuation;

(iv) Illness, injury, or other abnormal situations involving passengers or crewmembers; and

(v) Hijacking and other unusual situations.

(c) Each crewmember must perform at least the following emergency drills, utilizing the proper equipment and procedures, unless the Administrator finds that, with respect to a particular drill, the crewmember can be adequately trained by demonstration:

(1) Ditching.

(2) Emergency evacuations.

(3) Fire extinguishing and smoke control.

(4) Operation and use of emergency exits, including deployment and use of evacuation chutes.

(5) Use of crew and passenger oxygen.

(6) Removal of life rafts from the airplane, inflation of the life rafts, use

of life lines, and boarding of passengers and crew.

(7) Donning and inflation of life vests and the use of other individual flotation devices.

(d) Crewmembers who serve in operations above 25,000 feet must receive instruction in the following:

(1) Respiration.

(2) Hypoxia.

(3) Duration of consciousness without supplemental oxygen at altitude.

(4) Gas expansion.

(5) Gas bubble formation.

(6) Physical phenomena and incidents of decompression.

#### § 121.418 Differences training: Crewmembers and dispatchers.

(a) Differences training for crewmembers and dispatchers must consist of at least the following as applicable to their assigned duties and responsibilities:

(1) Instruction in each appropriate subject or part thereof required for initial ground training in the airplane unless the Administrator finds that particular subjects are not necessary.

(2) Flight training in each appropriate maneuver or procedure required for initial flight training in the airplane unless the Administrator finds that particular maneuvers or procedures are not necessary.

(3) The number of programmed hours of ground and flight training determined by the Administrator to be necessary for the airplane, the operation, and the crewmember or aircraft dispatcher involved.

Differences training for all variations of a particular type airplane may be included in initial, transition, upgrade, and recurrent training for the airplane.

#### § 121.419 Pilots and flight engineers: Initial, transition, and upgrade ground training.

(a) Initial, transition, or upgrade ground training for pilots and flight engineers must include instruction in at least the following as applicable to their assigned duties:

(1) General subjects—

(i) The certificate holder's dispatch or flight release procedures;

(ii) Principles and methods for determining weight and balance, and runway limitations for takeoff and landing;

(iii) Enough meteorology to insure a practical knowledge of weather phenomena, including the principles of frontal systems, icing, fog, thunderstorms, and high altitude weather situations;

(iv) Air traffic control systems, procedures, and phraseology;

(v) Navigation and the use of navigation aids, including instrument approach procedures;

(vi) Normal and emergency communication procedures;

(vii) Visual cues prior to and during descent below DH or MDA; and

(viii) Other instructions as necessary to ensure his competence.

(2) For each airplane type—

(i) A general description;

(ii) Performance characteristics;

(iii) Engines and propellers;

(iv) Major components;

(v) Major airplane systems (i.e., flight controls, electrical, hydraulic); other systems as appropriate; principles of normal, abnormal, and emergency operations; appropriate procedures and limitations;

(vi) Procedures for avoiding severe weather situations and for operating in or near thunderstorms (including best penetrating altitudes), turbulent air (including clear air turbulence), icing, hail, and other potentially hazardous meteorological conditions;

(vii) Operating limitations;

(viii) Fuel consumption and cruise control;

(ix) Flight planning;

(x) Each normal and emergency procedure; and

(xi) The approved Airplane Flight Manual.

(b) Initial ground training for pilots and flight engineers must consist of at least the following programmed hours of instruction in the required subjects specified in paragraph (a) of this section and in § 121.415(a) unless reduced under § 121.405:

(1) Group I airplanes—

(i) Reciprocating powered, 64 hours; and

(ii) Turbopropeller powered, 80 hours.

(2) Group II airplanes, 120 hours.

#### § 121.420 Flight navigators: Initial and transition ground training.

(a) Initial and transition ground training for flight navigators must include instruction in the subjects specified in § 121.419(a) as appropriate to his assigned duties and responsibilities and in the following with respect to the particular type airplane:

(1) Limitations on climb, cruise, and descent speeds.

(2) Each item of navigational equipment installed including appropriate radio, radar, and other electronic equipment.

(3) Airplane performance.

(4) Airspeed, temperature, and pressure indicating instruments or systems.

(5) Compass limitations and methods of compensation.

(6) Cruise control charts and data, including fuel consumption rates.

(7) Any other instruction as necessary to ensure his competence.

(b) Initial ground training for flight navigators must consist of at least the following programmed hours of instruction in the subjects specified in paragraph (a) of this section and in § 121.415(a) unless reduced under § 121.405:

(1) Group I airplanes—

(i) Reciprocating powered, 16 hours; and

(ii) Turbopropeller powered; 32 hours.

(2) Group II airplanes, 32 hours.

#### § 121.421 Flight attendants: Initial and transition ground training.

(a) Initial and transition ground training for flight attendants must include instruction in at least the following:

(1) General subjects—

(i) The authority of the pilot in command; and

(ii) Passenger handling, including the procedures to be followed in the case of deranged persons or other persons whose conduct might jeopardize safety.

(2) For each airplane type—

(i) A general description of the airplane emphasizing physical characteristics that may have a bearing on ditching, evacuation, and inflight emergency procedures and on other related duties;

(ii) The use of both the public address system and the means of communicating with other flight crewmembers, including emergency means in the case of attempted hijacking or other unusual situations; and

(iii) Proper use of electrical galley equipment and the controls for cabin heat and ventilation.

(b) Initial and transition ground training for flight attendants must include a competence check to determine ability to perform assigned duties and responsibilities.

(c) Initial ground training for flight attendants must consist of at least the following programmed hours of instruction in the subjects specified in paragraph (a) of this section and in § 121.415 (a) unless reduced under § 121.405:

(1) Group I airplanes—

(i) Reciprocating powered, 8 hours; and

(ii) Turbopropeller powered, 8 hours.

(2) Group II airplanes, 16 hours.

**§ 121.422 Aircraft dispatchers: Initial and transition ground training.**

(a) Initial and transition ground training for aircraft dispatchers must include instruction in at least the following:

(1) General subjects—

(i) Use of communications systems including the characteristics of those systems and the appropriate normal and emergency procedures;

(ii) Meteorology, including various types of meteorological information and forecasts, interpretation of weather data (including forecasting of en route and terminal temperatures and other weather conditions), frontal systems, wind conditions, and use of actual and prognostic weather charts for various altitudes;

(iii) The NOTAM system;

(iv) Navigational aids and publications;

(v) Joint dispatcher-pilot responsibilities;

(vi) Characteristics of appropriate airports;

(vii) Prevailing weather phenomena and the available sources of weather information; and

(viii) Air traffic control and instrument approach procedures.

(2) For each airplane—

(i) A general description of the airplane emphasizing operating and performance characteristics, navigation equipment, instrument approach and communication equipment, emergency equipment and procedures, and other subjects having a bearing on dispatcher duties and responsibilities;

(ii) Flight operation procedures including procedures specified in § 121.419 (a) (2) (vi);

(iii) Weight and balance computations;

(iv) Basic airplane performance dispatch requirements and procedures;

(v) Flight planning including track selection, flight time analysis, and fuel requirements; and

(vi) Emergency procedures.

(3) Emergency procedures must be emphasized, including the alerting of proper governmental, company, and private agencies during emergencies to give maximum help to an airplane in distress.

(b) Initial and transition ground training for aircraft dispatchers must include a competence check given by an appropriate supervisor or ground instructor that demonstrates knowledge and ability with the subjects set forth in paragraph (a) of this section.

(c) Initial ground training for aircraft dispatchers must consist of at least the following programmed hours of instruction in the subjects specified in paragraph (a) of this section and in § 121.415 (a) unless reduced under § 121.405:

(1) Group I airplanes—

(i) Reciprocating powered, 30 hours; and

(ii) Turbopropeller powered, 40 hours.

(2) Group II airplanes, 40 hours.

**§ 121.424 Pilots: Initial, transition, and upgrade flight training.**

(a) Initial, transition, and upgrade training for pilots must include flight training and practice in the maneuvers and procedures set forth in Appendix E to this part, as applicable.

(b) The maneuvers and procedures required by paragraph (a) of this section must be performed inflight except to the extent that certain maneuvers and procedures may be performed in an airplane simulator, an appropriate training device, or a static airplane as permitted in Appendix E to this part.

(c) Except as permitted in paragraph (d) of this section, the initial flight training required by paragraph (a) of this section must include at least the following programmed hours of inflight training and practice unless reduced under § 121.405:

(1) Group I airplanes—

(i) Reciprocating powered. Pilot in command, 10 hours; second in command, 6 hours; and

(ii) Turbopropeller powered. Pilot in command, 15 hours; second in command, 7 hours.

(2) Group II airplanes. Pilot in command, 20 hours; second in command, 10 hours.

(d) If the certificate holder's approved training program includes a course of training utilizing an airplane simulator under § 121.409 (c), each pilot must successfully complete—

(1) Training and practice in the simulator in at least all of the maneuvers and procedures set forth in Appendix E to this part for initial flight training that are capable of being performed in an

airplane simulator without a visual system; and

(2) A flight check in the simulator or the airplane to the level of proficiency of a pilot in command or second in command, as applicable, in at least the maneuvers and procedures set forth in Appendix F to this part that are capable of being performed in an airplane simulator without a visual system.

**§ 121.425 Flight engineers: Initial and transition flight training.**

(a) Initial and transition flight training for flight engineers must include at least the following:

(1) Training and practice in procedures related to the carrying out of flight engineer duties and functions. This training and practice may be accomplished either inflight, in an airplane simulator, or in a training device.

(2) A flight check that includes—

(i) Preflight inspection;

(ii) Inflight performance of assigned duties accomplished from the flight engineer station during taxi, runup, takeoff, climb, cruise, descent, approach, and landing;

(iii) Accomplishment of other functions, such as fuel management and preparation of fuel consumption records, and normal and emergency or alternate operation of all airplane flight systems, performed either inflight, in an airplane simulator, or in a training device.

(b) Except as permitted in paragraph (c) of this section, the initial flight training required by paragraph (a) of this section must include at least the same number of programmed hours of flight training and practice that are specified for a second in command pilot under § 121.424 (c) unless reduced under § 121.405.

(c) If the certificate holder's approved training program includes a course of training utilizing an airplane simulator or other training device under § 121.409 (c), each flight engineer must successfully complete in the simulator or other training device—

(1) Training and practice in at least all of the assigned duties, procedures, and functions required by paragraph (a) of this section; and

(2) A flight check to a flight engineer level of proficiency in the assigned duties, procedures, and functions.

**§ 121.426 Flight navigators: Initial and transition flight training.**

(a) Initial and transition flight training for flight navigators must include flight training and a flight check that are adequate to insure his proficiency in the performance of his assigned duties.

(b) The flight training and checks specified in paragraph (a) of this section must be performed—

(1) Inflight or in an appropriate training device; or

(2) In operations under this part if performed under supervision of a qualified flight navigator.

**§ 121.427 Recurrent training.**

(a) Recurrent training must ensure that each crew member or dispatcher is

adequately trained and currently proficient with respect to the type airplane (including differences training, if applicable) and crewmember position involved.

(b) Recurrent ground training for crewmembers and dispatchers must include at least the following:

(1) A quiz or other review to determine the state of the crewmember's or dispatcher's knowledge with respect to the airplane and position involved.

(2) Instruction as necessary in the subjects required for initial ground training by § 121.415(a), as appropriate, including emergency training (not required for aircraft dispatchers).

(3) For flight attendants and dispatchers, a competence check as required by §§ 121.421(b) and 121.422(b), respectively.

(c) Recurrent ground training for crewmembers and dispatchers must consist of at least the following programmed hours unless reduced under § 121.405:

(1) For pilots and flight engineers—

(i) Group I, reciprocating powered airplanes, 16 hours;

(ii) Group I turbopropeller powered airplanes, 20 hours; and

(iii) Group II airplanes, 25 hours.

(2) For flight navigators—

(i) Group I reciprocating powered airplanes, 12 hours;

(ii) Group I turbopropeller powered airplanes, 16 hours; and

(iii) Group II airplanes, 16 hours.

(3) For flight attendants—

(i) Group I reciprocating powered airplanes, 4 hours;

(ii) Group I turbopropeller powered airplanes, 5 hours; and

(iii) Group II airplanes, 12 hours.

(4) For aircraft dispatchers—

(i) Group I reciprocating powered airplanes, 8 hours;

(ii) Group I turbopropeller powered airplanes, 10 hours; and

(iii) Group II airplanes, 20 hours.

(d) Recurrent flight training for flight crewmembers must include at least the following:

(1) For pilots, flight training in the maneuvers and procedures set forth in Appendix F to this part except as follows—

(i) The number of programmed in-flight hours is not specified; and

(ii) Satisfactory completion of a proficiency check may be substituted for recurrent flight training as permitted in § 121.433(c).

(2) For flight engineers, flight training as provided by § 121.425(a) except as follows—

(i) The specified number of in-flight hours is not required; and

(ii) The flight check, other than the preflight inspection, may be conducted in an airplane simulator or other training device.

(3) For flight navigators, enough in-flight training and an in-flight check to insure competency with respect to operating procedures and navigation equipment to be used and familiarity with essential navigation information pertaining to the certificate holder's routes that require a flight navigator.

4. By amending the title of Subpart O to read as follows:

#### Subpart O—Crewmember Qualifications

5. By amending § 121.431 to read as follows:

##### § 121.431 Applicability.

This subpart prescribes crewmember qualifications for all certificate holders except where otherwise specified.

6. By adding a new section after § 121.431 to read as follows:

##### § 121.432 General.

(a) When a flight crewmember completes a check required by this subpart, the check airman who is responsible for the particular check shall certify as to the flight crewmember's proficiency. This certification shall be made a part of the flight crewmember's record.

(b) A flight crewmember who takes a check in the calendar month before, or the calendar month after, the month in which it becomes due, is considered to have taken that check during the month it became due.

(c) Except in the case of operating experience under § 121.434, a pilot who serves as second in command of an operation that requires three or more pilots must be fully qualified to act as pilot in command of that operation.

(d) No certificate holder may conduct a check or any training in operations under this part, except for the following checks and training required by this part or the certificate holder:

(1) Line checks for pilots.

(2) Flight navigator training conducted under the supervision of a flight navigator flight instructor.

(3) Flight navigator flight checks.

(4) Flight engineer checks (except for emergency procedures), if the person being checked is qualified and current in accordance with § 121.453(a).

(5) Flight attendant training and competence checks.

Except for pilot line checks and flight engineer flight checks, the person being trained or checked may not be used as a required crewmember.

(e) For the purposes of this subpart, the airplane groups prescribed in § 121.400 apply.

(f) For the purposes of this subpart, the terms and definitions in § 121.400 apply.

7. By amending § 121.433 to read as follows:

##### § 121.433 Training required.

(a) *Initial training.* No certificate holder may use any person nor may any person serve as a required crewmember on an airplane unless that person has satisfactorily completed, in a training program approved under Subpart N of this part, initial ground and flight training for that type airplane and for the particular crewmember position, except as follows:

(1) Crewmembers who have qualified and served as a crewmember on another type airplane of the same group may

serve in the same crewmember capacity upon completion of transition training as provided in § 121.415.

(2) Crewmembers who have qualified and served as second in command or flight engineer on a particular type airplane may serve as pilot in command or second in command, respectively, upon completion of upgrade training for that airplane as provided in § 121.415.

(b) *Differences training.* No certificate holder may use any person nor may any person serve as a required crewmember on an airplane of a type for which differences training is included in the certificate holder's approved training program unless that person has satisfactorily completed, with respect to both the crewmember position and the particular variation of the airplane in which he serves, either initial or transition ground and flight training, or differences training, as provided in § 121.415.

(c) *Recurrent training.* (1) No certificate holder may use any person nor may any person serve as a required crewmember on an airplane unless, within the preceding 12 calendar months—

(i) For flight crewmembers, he has satisfactorily completed recurrent ground and flight training for that airplane and crewmember position and a flight check, as applicable;

(ii) For flight attendants and dispatchers, he has satisfactorily completed recurrent ground training and a competence check; and

(iii) In addition, for pilots in command, he has satisfactorily completed, within the preceding 6 calendar months, recurrent flight training, in addition to the recurrent flight training required in subparagraph (1) (i) of this paragraph, in the airplanes in which he serves as pilot in command in operations under this part.

(2) For pilots, a proficiency check as provided in § 121.441 may be substituted for the recurrent flight training required by this paragraph and the approved simulator course of training under § 121.409(b) may be substituted for alternate periods of recurrent flight training required in that airplane, except as provided in paragraph (d) of this section.

(d) For each airplane in which a pilot serves as pilot in command, he must satisfactorily complete either recurrent flight training or a proficiency check within the preceding 12 calendar months.

8. By adding a new section after § 121.433 to read as follows:

##### § 121.434 Operating experience.

(a) No certificate holder may use a person nor may any person serve as a required crewmember on an airplane unless he has completed, on that type airplane and in that crewmember position, the operating experience required by this section, except as follows:

(1) Crewmembers other than pilots in command may serve as provided herein for the purpose of meeting the requirements of this section.

(2) Pilots who are meeting the pilot in command requirements may serve as second in command.

(b) In acquiring the operating experience, crewmembers must comply with the following:

(1) In the case of a flight crewmember, he must hold the appropriate certificates and ratings for the crewmember position and the airplane, except that a pilot who is meeting the pilot in command requirements must hold the appropriate certificates and ratings for a pilot in command in the airplane.

(2) The experience must be acquired after satisfactory completion of the appropriate ground and flight training for the airplane and crewmember position.

(3) The experience must be acquired inflight during operations under this part.

However, separate operating experience is not required for variations within the same type airplane.

(c) Pilot crewmembers must acquire operating experience as follows:

(1) A pilot in command must—

(i) Perform the duties of a pilot in command under the supervision of a check pilot; and

(ii) In addition, if the certificate holder's approved training program includes a course of training in an airplane simulator under § 121.409(c), be observed performing those duties by an FAA inspector during at least one flight leg which includes a takeoff and landing.

(2) A second in command pilot must perform the duties of a second in command under the supervision of a check pilot or observe the performance of those duties on the flight deck.

(3) The hours of operating experience for all pilots are as follows:

(i) For initial training, 15 hours in Group I reciprocating powered airplanes, 20 hours in Group I turbopropeller powered airplanes, and 25 hours in Group II airplanes;

(ii) For transition training, except as provided in subparagraph (3)(iii) of this paragraph, 10 hours in Group I reciprocating powered airplanes, 12 hours in Group I turbopropeller powered airplanes, and 15 hours in Group II airplanes; and

(iii) In the case of transition training if the certificate holder's approved training program includes a course of training in an airplane simulator under § 121.409(c), each pilot must comply with the requirements set forth in subparagraph (3)(i) of this paragraph for initial training.

(d) A flight engineer must perform the duties of a flight engineer under the supervision of a check airman or a qualified flight engineer for at least the following number of hours:

(1) Group I reciprocating powered airplanes, 8 hours.

(2) Group I turbopropeller powered airplanes, 10 hours.

(3) Group II airplanes, 12 hours.

(e) A flight attendant must, for at least 5 hours, either perform the duties of a flight attendant under the supervision of a flight attendant supervisor or observe the performance of these duties. However, operating experience is not required for a flight attendant who has

previously acquired such experience on an airplane of greater passenger capacity if the certificate holder shows that he has received sufficient ground training and practice for the airplane in which he is to serve.

(f) The hours of operating experience may be reduced to 50 percent of the hours required by this section by the substitution of one additional takeoff and landing for each hour of flight.

Notwithstanding the reductions in programmed hours permitted under §§ 121.405 and 121.409 of Subpart N of this part, the hours of operating experience are not subject to reduction other than as provided in paragraph (f) of this section.

9. By adding a new section after § 121.439 to read as follows:

**§ 121.440 Line checks.**

(a) No certificate holder may use any person nor may any person serve as pilot in command of an airplane unless, within the preceding 12 calendar months, that person has passed a line check in which he satisfactorily performs the duties and responsibilities of a pilot in command in one of the types of airplanes he is to fly.

(b) A pilot in command line check for domestic and flag air carrier pilots must—

(1) Be given by a pilot check airman who is currently qualified on both the route and the airplane; and

(2) Consist of at least a scheduled flight over a typical part of the air carriers route to which the pilot is normally assigned.

(c) A pilot in command line check for supplemental air carriers and commercial operators must—

(1) Be given by a pilot check airman who is currently qualified on the airplane; and

(2) Consist of at least one flight over a part of a Federal airway, foreign airway, or advisory route over which the pilot may be assigned.

10. By amending § 121.441 to read as follows:

**§ 121.441 Proficiency checks.**

(a) No certificate holder may use any person nor may any person serve as a required pilot flight crewmember unless that person has satisfactorily completed either a proficiency check, or an approved simulator course of training under § 121.409, as follows:

(1) For a pilot in command, a proficiency check within the preceding 12 calendar months and, in addition, within the preceding 6 calendar months, either a proficiency check or the simulator training.

(2) For all other pilots, a proficiency check within the preceding 24 calendar months and, in addition, within the preceding 12 calendar months, either a proficiency check or the simulator training.

The satisfactory completion of a type rating flight check under § 61.147 of this

chapter satisfies the requirement for a proficiency check.

(b) Except as provided in paragraphs (c) and (d) of this section, a proficiency check must meet the following requirements:

(1) It must include at least the procedures and maneuvers set forth in Appendix F to this part unless otherwise specifically provided in that appendix.

(2) It must be given by the Administrator or a pilot check airman.

(c) An approved airplane simulator or other appropriate training device may be used in the conduct of a proficiency check as provided in Appendix F to this part.

(d) A person giving a proficiency check may, in his discretion, waive any of the maneuvers or procedures for which a specific waiver authority is set forth in Appendix F to this part if—

(1) The Administrator has not specifically required the particular maneuver or procedure to be performed;

(2) The pilot being checked is, at the time of the check, employed by a certificate holder as a pilot; and

(3) The pilot being checked is currently qualified for operations under this part in the particular type airplane and crewmember position (i.e., pilot in command, second in command) involved.

(e) If the pilot being checked fails any of the required maneuvers, the person giving the proficiency check may give additional training to the pilot during the course of the proficiency check. In addition to repeating the maneuvers failed, the person giving the proficiency check may require the pilot being checked to repeat any other maneuvers he finds are necessary to determine the pilot's proficiency. If the pilot being checked is unable to demonstrate satisfactory performance to the person conducting the check, the certificate holder may not use him nor may he serve in operations under this part until he has satisfactorily completed a proficiency check.

**§ 121.442 [Deleted]**

11. By deleting § 121.442.

**§ 121.451 [Deleted]**

12. By deleting § 121.451.

13. By amending § 121.453 to read as follows:

**§ 121.453 Flight engineer qualifications.**

(a) No certificate holder may use any person nor may any person serve as a flight engineer on an airplane unless, within the preceding 6 calendar months, he has had at least 50 hours of flight time as a flight engineer on that type airplane or the certificate holder or the Administrator has checked him on that type airplane and determined that he is familiar and competent with all essential current information and operating procedures.

(b) A flight check given in accordance with § 121.425(a)(2) satisfies the requirements of paragraph (a) of this section.

14. By amending § 121.463 to read as follows:

# § 121.463 Aircraft dispatcher qualifications.

(a) No domestic or flag air carrier may use any person nor may any person serve as an aircraft dispatcher for a particular type aircraft unless that person has, with respect to that aircraft, satisfactorily completed the following:

(1) Initial dispatcher training, except that a person who has satisfactorily completed such training for another type airplane of the same group need only complete the appropriate transition training.

(2) Differences training, if applicable.

(3) Within the preceding 12 calendar months, recurrent training unless the requirements of subparagraph (a) (1) of this paragraph have been met during that period.

(4) Operating familiarization consisting of at least 5 hours observing, from the flight deck, operations under this part, except that a person may serve as an aircraft dispatcher without meeting this requirement for 90 days after completion of initial dispatcher training. In addition, this requirement may be reduced to a minimum of 2½ hours by the substitution of one additional takeoff and landing for an hour of flight.

15. By deleting Appendix B to Part 121.

16. By amending Appendix E to Part 121 to read as follows:

## APPENDIX E

The maneuvers and procedures required by section 121.424 for pilot initial, transition, and upgrade flight training are set forth in this appendix and must be performed inflight except to the extent that certain maneuvers and procedures may be performed in an airplane simulator with a visual system (visual simulator), an airplane simulator without a visual system (nonvisual simulator), a training device, or a static airplane as indicated by the appropriate symbol in the respective column opposite the maneuver or procedure.

Whenever a maneuver or procedure is authorized to be performed in a nonvisual simulator, it may be performed in a visual simulator; when authorized in a training device, it may be performed in a visual or nonvisual simulator, and in some cases, a static airplane. Whenever the requirement may be performed in either a training device or a static airplane, the appropriate symbols are entered in the respective columns.

For the purpose of this appendix, the following symbols mean—

P = Pilot in Command (PIC).  
S = Second in Command (SIC).  
B = PIC and SIC.  
F = Flight Engineer.  
PJ = PIC transition Jet to Jet.  
PP = PIC transition Prop. to Prop.  
SJ = SIC transition Jet to Jet.  
SP = SIC transition Prop. to Prop.  
AT = All transition categories (PJ, PP, SJ, SP).  
PS = SIC upgrading to PIC (same airplane).  
SF = Flight Engineer upgrading to SIC (same airplane).  
BU = Both SIC and Flight Engineer upgrading (same airplane).

## FLIGHT TRAINING REQUIREMENTS

Maneuvers/Procedures	Initial training					Transition training					Upgrade training				
	A/P		Simulator			A/P		Simulator			A/P		Simulator		
	Inflight	Static	Visual simulator	Nonvisual simulator	Training device	Inflight	Static	Visual simulator	Nonvisual simulator	Training device	Inflight	Static	Visual simulator	Nonvisual simulator	Training device
As appropriate to the airplane and the operation involved, flight training for pilots must include the following maneuvers and procedures.															
I. Preflight:															
(a) Visual inspection of the exterior and interior of the airplane, the location of each item to be inspected, and the purpose for inspecting it.		B					AT						BU		
(b) Use of the prestart check list, appropriate control system checks, starting procedures, radio and electronic equipment checks, and the selection of proper navigation and communications radio facilities and frequencies prior to flight.			B					AT						BU	
(c) Taxiing, sailing, and docking procedures in compliance with instructions issued by the appropriate Traffic Control Authority or by the person conducting the training.	B					AT					BU				
(d) Pretakeoff checks that include powerplant checks.			B					AT						BU	
II. Takeoffs:															
(a) Normal takeoffs which, for the purpose of this maneuver, begin when the airplane is taxied into position on the runway to be used.	B					AT					BU				
(b) Takeoffs with instrument conditions simulated at or before reaching an altitude of 100' above the airport elevation.			B					AT						BU	
(c) Crosswind takeoffs.	B					AT					BU				
(d) Takeoffs with a simulated failure of the most critical powerplant—	B					AT					BU				
(1) At a point after V <sub>1</sub> and before V <sub>2</sub> that in the judgment of the person conducting the training is appropriate to the airplane type under the prevailing conditions.															
(2) At a point as close as possible after V <sub>1</sub> when V <sub>1</sub> and V <sub>2</sub> (or V <sub>1</sub> and V <sub>2</sub> ) are identical; or															
(3) At the appropriate speed for non-transport category airplanes.															
(e) Rejected takeoffs accomplished during a normal takeoff run after reaching a reasonable speed determined by giving due consideration to aircraft characteristics, runway length, surface conditions, wind direction and velocity, brake heat energy, and any other pertinent factors that may adversely affect safety or the airplane.	B					AT					SF		PS		
Training in at least one of the above takeoffs must be accomplished at night.															
III. Flight Maneuvers and Procedures:															
(a) Turns with and without spoilers.	B							AT			SF			PS	
(b) Tuck and Mach buffet.	B		B					AT			SF			PS	
(c) Maximum endurance and maximum range procedures.			B					AT						PS	
(d) Operation of systems and controls at the flight engineer station.								AT			SF			PS	
(e) Runway and jammed stabilizer procedures.	B														
(f) Normal and abnormal or alternate operation of the following systems and procedures:															
(1) Pressurization.					B					AT					BU
(2) Pneumatic.					B					AT					BU
(3) Air conditioning.					B					AT					BU
(4) Fuel and oil.			B		B		AT			AT			BU		BU
(5) Electrical.			B		B		AT			AT			BU		BU
(6) Hydraulic.			B		B		AT			AT			BU		BU
(7) Flight control.			B		B		AT			AT			BU		BU
(8) Anti-icing and deicing.			B		B			AT		AT			BU		BU
(9) Auto-pilot.								AT		AT			BU		BU
(10) Automatic or other approach aids	B							AT		SF			PS		
(11) Stall warning devices, stall avoidance devices, and stability augmentation devices.	B							AT		SF			PS		
(12) Airborne radar devices.					B			AT		AT			BU		BU
(13) Any other systems, devices, or aids available.			B		B		AT			AT			BU		BU
(14) Electrical, hydraulic, flight control, and flight instrument system malfunctioning or failure.		B			B		AT			AT			BU		BU
(15) Landing gear and flap systems failure or malfunction.										AT					BU
(16) Failure of navigation or communications equipment.			B							AT					BU

FLIGHT TRAINING REQUIREMENTS—Continued

Maneuvers/Procedures	Initial training					Transition training					Upgrade training				
	A/P		Simulator			A/P		Simulator			A/P		Simulator		
	Infight	Static	Visual simulator	Nonvisual simulator	Training device	Infight	Static	Visual simulator	Nonvisual simulator	Training device	Infight	Static	Visual simulator	Nonvisual simulator	Training device
(g) Flight emergency procedures that include at least the following: (1) Powerplant, heater, cargo compartment, cabin, flight deck, wing, and electrical fires. (2) Smoke control. (3) Powerplant failures. (4) Fuel jettisoning. (5) Any other emergency procedures outlined in the appropriate flight manual.		B			B	AT				AT	BU				BU
(h) Steep turns in each direction. Each steep turn must involve a bank angle of 45° with a heading change of at least 180° but not more than 360°.	P	B			B	AT				AT	BU				BU
(i) Approaches to stalls in the takeoff configuration (except where the airplane uses only a zero-flap configuration), in the clean configuration, and in the landing configuration.	B								AT		SF			PS	
Training in at least one of the above configurations must be accomplished while in a turn with a bank angle between 15° and 30°.									AT		SF			PS	
(j) Recovery from specific flight characteristics that are peculiar to the airplane type.	B								AT		SF			PS	
(k) Instrument procedures that include the following: (1) Area departure and arrival. (2) Use of navigation systems including adherence to assigned radials. (3) Holding.				B					AT					BU	
(l) ILS instrument approaches that include the following: (1) Normal ILS approaches. (2) Manually controlled ILS approaches with a simulated failure of one powerplant which occurs before initiating the final approach course and continues to touchdown or through the missed approach procedure.	B			B		AT			AT		BU			BU	
(m) Instrument approaches and missed approaches other than ILS which include the following: (1) Nonprecision approaches. (2) In addition, at least one approach and missed approach procedure, other than ILS, that the trainee is likely to use.	B			B		AT			AT		BU			BU	
In connection with paragraphs III(k) and III(l), each instrument approach must be performed according to any procedures and limitations approved for the approach facility used. The instrument approach begins when the airplane is over the initial approach fix for the approach procedure being used (or turned over to the final approach controller in the case of GCA approach) and ends when the airplane touches down on the runway or when transition to a missed approach configuration is completed.															

FLIGHT TRAINING REQUIREMENTS—Continued

Maneuvers/Procedures	Initial training					Transition training					Upgrade training				
	A/P		Simulator			A/P		Simulator			A/P		Simulator		
	Infight	Static	Visual simulator	Nonvisual simulator	Training device	Infight	Static	Visual simulator	Nonvisual simulator	Training device	Infight	Static	Visual simulator	Nonvisual simulator	Training device
(n) Circling approaches which include the following: (1) That portion of the circling approach to the authorized minimum altitude for the procedure being used must be made under simulated instrument conditions. (2) The circling approach must be made to the authorized minimum circling approach altitude followed by a change in heading and the necessary maneuvering (by visual reference) to maintain a flight path that permits a normal landing on a runway at least 90° from the final approach course of the simulated instrument portion of the approach. (3) The circling approach must be performed without excessive maneuvering, and without exceeding the normal operating limits of the airplane. The angle of bank should not exceed 30°.	B					AT					BU				
(o) Zero flap approaches.	B					AT					BU				
(p) Missed approaches which include the following: (1) Missed approaches from ILS approaches. (2) Other missed approaches. (3) Missed approaches that include a complete approved missed approach procedure. (4) Missed approaches that include a powerplant failure.	B					AT					BU				
IV. Landings and Approaches to Landings: (a) Normal landings. (b) Landing and go around with the horizontal stabilizer out of trim. (c) Landing in sequence from an ILS instrument approach. (d) Cross wind landing. (e) Maneuvering to a landing with simulated failure of 50% of the available powerplants. The simulated loss of power must be on one side of the airplane (center and one outboard engine on three-engine airplanes). (f) Landing under simulated circling approach conditions. (g) Rejected landings that include a normal missed approach procedure after the landing is rejected. For the purpose of this maneuver the landing should be rejected at approximately 50' and approximately over the runway threshold. (h) Zero flap landings if the Administrator finds that maneuver appropriate for training in the airplane. (i) Manual reversion (if appropriate).	B					AT					BU				
Training in landings and approaches to landings must include the types and conditions provided in IV (a) through (i) but more than one type may be combined where appropriate.															
Training in at least one of the above landings must be accomplished at night.	B					AT					BU				



17. By amending Appendix F to Part 121 to read as follows:

APPENDIX F

The maneuvers and procedures required by section 121.441 for pilot proficiency checks are set forth in this appendix and must be performed inflight except to the extent that certain maneuvers and procedures may be performed in an airplane simulator with a visual system (visual simulator), an airplane simulator without a visual system (nonvisual simulator), or a training device as indicated by the appropriate symbol in the respective column opposite the maneuver or procedure.

Whenever a maneuver or procedure is authorized to be performed in a nonvisual simulator, it may also be performed in a visual simulator; when authorized in a training device, it may be performed in a visual or nonvisual simulator.

For the purpose of this appendix, the following symbols mean—

P=Pilot in Command.

B=Both Pilot in Command and Second in Command.

\*=A symbol and asterisk (B\*) indicates that a particular condition is specified in the maneuvers and procedures column.

#=When a maneuver is preceded by this symbol # it indicates the maneuver may be required in the airplane at the discretion of the person conducting the check.

Throughout the maneuvers prescribed in this appendix, good judgment commensurate with a high level of safety must be demonstrated. In determining whether such judgment has been shown, the person conducting the check considers adherence to approved procedures, actions based on analysis of situations for which there is no prescribed procedure or recommended practice, and qualities of prudence and care in selecting a course of action.

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Nonvisual simulator	Training device	Waiver provisions of § 121.441(d)
<p>The procedures and maneuvers set forth in this appendix must be performed in a manner that satisfactorily demonstrates knowledge and skill with respect to—</p> <p>(1) The airplane, its systems and components;</p> <p>(2) Proper control of airspeed, configuration, direction, altitude, and attitude in accordance with procedures and limitations contained in the approved Airplane Flight Manual, the certificate holder's operations Manual, check lists, or other approved material appropriate to the airplane type; and</p> <p>(3) Compliance with approach, ATC, or other applicable procedures.</p> <p>I. Preflight:</p> <p>(a) Equipment examination (oral or written). As part of the practical test the equipment examination must be closely coordinated with, and related to, the flight maneuvers portion but may not be given during the flight maneuvers portion. The equipment examination must cover—</p> <p>(1) Subjects requiring a practical knowledge of the airplane, its powerplants, systems, components, operational, and performance factors;</p> <p>(2) Normal, abnormal, and emergency procedures, and the operations and limitations relating thereto; and</p> <p>(3) The appropriate provisions of the approved Airplane Flight Manual.</p> <p>The person conducting the check may accept, as equal to this equipment test, an equipment test given to the pilot in the certificate holder's ground school within the preceding 6 calendar months.</p> <p>(b) Preflight inspection. The pilot must—</p> <p>(1) Conduct an actual visual inspection of the exterior and interior of the airplane, locating each item and explaining briefly the purpose for inspecting it; and</p> <p>(2) Demonstrate the use of the prestart check list, appropriate control system checks, starting procedures, radio and electronic equipment checks, and the selection of proper navigation and communications radio facilities and frequencies prior to flight.</p>						

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Nonvisual simulator	Training device	Waiver provisions of § 121.441(d)
<p>If a flight engineer is a required crewmember for the particular type airplane, the actual visual inspection may either be waived under § 121.441(d) or it may be replaced by using an approved pictorial means that realistically portrays the location and detail of inspection items.</p> <p>(c) Taxiing. This maneuver includes taxiing (in the case of a second in command proficiency check to the extent practical from the second in command crew position), sailing, or docking procedures in compliance with instructions issued by the appropriate traffic control authority or by the person conducting the checks.</p> <p>(d) Powerplant checks. As appropriate to the airplane type.</p> <p>II. Takeoffs:</p> <p>(a) Normal. One normal takeoff which, for the purpose of this maneuver, begins when the airplane is taxied into position on the runway to be used.</p> <p>(b) Instrument. One takeoff with instrument conditions simulated at or before reaching an altitude of 100' above the airport elevation.</p> <p>(c) Crosswind. One crosswind takeoff, if practicable, under the existing meteorological, airport, and traffic conditions.</p> <p>Requirements (a) and (c) may be combined, and requirements (a), (b), and (c) may be combined if (b) is performed inflight.</p> <p>(d) Powerplant failure. One takeoff with a simulated failure of the most critical powerplant—</p> <p>(1) At a point after <math>V_1</math> and before <math>V_2</math> that in the judgment of the person conducting the check is appropriate to the airplane type under the prevailing conditions;</p> <p>(2) At a point as close as possible after <math>V_1</math> when <math>V_1</math> and <math>V_2</math> for <math>V_1</math> and <math>V_2</math> are identical; or</p> <p>(3) At the appropriate speed for nontransport category airplanes.</p> <p>(e) Rejected. A rejected takeoff may be performed in an airplane during a normal takeoff run after reaching a reasonable speed determined by giving due consideration to aircraft characteristics, runway length, surface conditions, wind direction and velocity, brake heat energy, and any other pertinent factors that may adversely affect safety or the airplane.</p> <p>III. Instrument Procedures:</p> <p>(a) Area departure and area arrival. During each of these maneuvers the applicant must—</p> <p>(1) Adhere to actual or simulated ATC clearances (including assigned radials); and</p> <p>(2) Properly use available navigation facilities.</p> <p>Either area arrival or area departure, but not both, may be waived under § 121.441(d).</p> <p>(b) Holding. This maneuver includes entering, maintaining, and leaving holding patterns. It may be performed in connection with either area departure or area arrival.</p> <p>(c) ILS and other instrument approaches. There must be the following:</p> <p>(1) At least one normal ILS approach.</p> <p>(2) At least one manually controlled ILS approach with a simulated failure of one powerplant. The simulated failure should occur before initiating the final approach course and must continue to touchdown or through the missed approach procedure.</p> <p>(3) At least one nonprecision approach procedure that is representative of the nonprecision approach procedures that the certificate holder is likely to use.</p> <p>(4) Demonstration of at least one nonprecision approach procedure on a letdown aid other than the approach procedure performed under subparagraph (3) of this paragraph that the certificate holder is approved to use. If performed in a training device, the procedures must be observed by a check pilot or an approved instructor.</p>		B				
		B*		B*		
	B			B*		
		B*				
			B			
				B*		B
	B			B		B*
				B		
	B		B			
	B					
					B	
						B*

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Infight	Visual simulator	Nonvisual simulator	Training device	Waiver provisions of § 121.441 (d)
Each instrument approach must be performed according to any procedures and limitations approved for the approach facility used. The instrument approach begins when the airplane is over the initial approach fix for the approach procedure being used (or turned over to the final approach controller in the case of ICA approach) and ends when the airplane touches down on the runway or when transition to a missed approach configuration is completed. Instrument conditions need not be simulated below 100' above touchdown zone elevation.						
(d) Circling approaches. If the certificate holder is approved for circling minimums below 1000-3, at least one circling approach must be made under the following conditions—			B			B*
(1) The portion of the approach to the authorized minimum circling approach altitude must be made under simulated instrument conditions.	B					
(2) The approach must be made to the authorized minimum circling approach altitude followed by a change in heading and the necessary maneuvering (by visual reference) to maintain a flight path that permits a normal landing on a runway at least 90° from the final approach course of the simulated instrument portion of the approach.						
(3) The circling approach must be performed without excessive maneuvering, and without exceeding the normal operating limits of the airplane. The angle of bank should not exceed 30°.						
If local conditions beyond the control of the pilot prohibit the maneuver or prevent it from being performed as required, it may be waived as provided in § 121.441(d). <i>Provided, however</i> , That the maneuver may not be waived under this provision for two successive proficiency checks. In addition, this maneuver may be waived for a second in command if the certificate holder's manual prohibits a second in command from performing a circling approach in operations under this part.						
(c) Missed approach.		B				
(1) Each pilot must perform at least one missed approach from an ILS approach.						
(2) Each pilot in command must perform at least one additional missed approach.			P			
A complete approved missed approach procedure must be accomplished at least once. At the discretion of the person conducting the check, a simulated powerplant failure may be required during any of the missed approaches. These maneuvers may be performed either independently or in conjunction with maneuvers required under sections III or V of this appendix.						
IV. Infight Maneuvers:						
(a) Steep turns. At least one steep turn in each direction must be performed. Each steep turn must involve a bank angle of 45° with a heading change of at least 180° but not more than 360°.	P			P		P
(b) Approaches to stalls. For the purpose of this maneuver the required approach to a stall is reached when there is a perceptible buffet or other response to the initial stall entry. Except as provided below there must be at least three approaches to stalls as follows:	B			B		B*
(1) One must be in the takeoff configuration (except where the airplane uses only a zero-flap takeoff configuration).						
(2) One in a clean configuration.						
(3) One in a landing configuration.						
At the discretion of the person conducting the check, one approach to a stall must be performed in one of the above configurations while in a turn with the bank angle between 15° and 30°. Two out of the three approaches required by this paragraph may be waived.						
If the certificate holder is authorized to dispatch or flight release the airplane with a stall warning device inoperative the device may not be used during this maneuver.						
(c) Specific flight characteristics. Recovery from specific flight characteristics that are peculiar to the airplane type.				B		B
(d) Powerplant failures. In addition to specific requirements for maneuvers with simulated powerplant failures, the person conducting the check may require a simulated powerplant failure at any time during the check.				B		

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Infight	Visual simulator	Nonvisual simulator	Training device	Waiver provisions of § 121.441 (d)
V. Landings and Approaches to Landings:						
Landings and approaches to landings must include the types listed below, but more than one type may be combined where appropriate:						
(a) Normal landing.		B*				
(b) Landing in sequence from an ILS instrument approach except that if circumstances beyond the control of the pilot prevent an actual landing, the person conducting the check may accept an approach to a point where in his judgment a landing to a full stop could have been made.		B*				
(c) Crosswind landing, if practical under existing meteorological, airport, and traffic conditions.		B*				
(d) Maneuvering to a landing with simulated failure of 50% of the available powerplants. The simulated loss of power must be on one side of the airplane (center and one outboard engine on three-engine airplanes), except that in the case of a proficiency check for other than a pilot in command the simulated loss of power may be only the most critical powerplant. However, in turbojet power airplanes, the maneuvers in subparagraphs (1) and (2) may be substituted for this requirement in pilot in command recurrent (as distinguished from initial and transition) training and proficiency checks.		B*				
(1) In the case of a four-engine turbojet powered airplane, maneuvering to a landing with simulated failure of the most critical powerplant and performance, either in an approved simulator or in flight at altitude, of the maneuver with simulated failure of 50% of the available powerplants unless the Administrator determines that the training in this maneuver provided by the certificate holder is unsatisfactory.		B*		B*		
(2) In the case of a three-engine airplane, maneuvering to a landing using an approved procedure that approximates the loss of two powerplants.		B				
(e) If the certificate holder is approved for circling minimums below 1000-3, a landing under simulated circling approach conditions. However, when performed in an airplane, if circumstances beyond the control of the pilot prevent a landing, the person conducting the check may accept an approach to a point where in his judgment a landing to a full stop could have been made.				B*		
(f) A rejected landing, including a normal missed approach procedure, that is rejected approximately 50' over the runway and approximately over the runway threshold. This maneuver may be combined with instrument, circling, or missed approach procedures, but instrument conditions need not be simulated below 100 feet above the runway.			B			
Notwithstanding the authorizations for combining and waiving of maneuvers and for the use of a simulator, for all pilot in command and initial second in command proficiency checks at least two actual landings (one to a full stop) must be made.			B			
VI. Normal and Abnormal Procedures:						
Each applicant must demonstrate the proper use of as many of the systems and devices listed below as the person conducting the check finds are necessary to determine that the person being checked has a practical knowledge of the use of the systems and devices appropriate to the airplane type:						
(a) Anti-icing and de-icing systems.					B	
(b) Auto-pilot systems.					B	
(c) Automatic or other approach aid systems.					B	
(d) Stall warning devices, stall avoidance devices, and stability augmentation devices.					B	
(e) Airborne radar devices.					B	
(f) Any other systems, devices, or aids available.					B	
(g) Hydraulic and electrical system failures and malfunctions.					B	
(h) Landing gear and flap systems failure or malfunction.					B	
(i) Failure of navigation or communications equipment.					B	
VII. Emergency Procedures:						
Each applicant must demonstrate the proper emergency procedures for as many of the emergency situations listed below as the person conducting the check finds are necessary to determine that the person being checked has an adequate knowledge of, and ability to perform, such procedure:						
(a) Fire in flight.					B	
(b) Smoke control.					B	

Maneuvers/Procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Nonvisual simulator	Training device	Wirec Procedures 64 § 121.441 (c)
(c) Rapid decompression.....				B		
(d) Emergency descent.....				B		
(e) Any other emergency procedures outlined in the appropriate approved Airplane Flight Manual.				B		

(Secs. 313(a), 601, 602, 604, and 607 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421, 1422, 1424, and 1427), and section 6(c) of the Department of Transportation Act, 49 U.S.C. 1655(c))

Issued in Washington, D.C., on December 22, 1969.

J. H. SHAFER,  
Administrator.

## **Title 14—AERONAUTICS AND SPACE**

### **Chapter 1—Federal Aviation Admin- istration, Department of Transpor- tation**

[Docket No. 9509; Amdt. Nos. 61-45 and  
121-55]

#### **PART 61—CERTIFICATION: PILOTS AND FLIGHT INSTRUCTORS**

#### **PART 121—CERTIFICATION AND OP- ERATIONS: DOMESTIC, FLAG, AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT**

#### **Corrections to Amendments Nos. 61-45 and 121-55 "Training Programs"**

Paragraph III(e) of Appendix A to Part 61, entitled "Instrument Procedures: Missed approaches"; subparagraph 121.400(c)(5); and, the amendatory language to § 121.463, appearing in the FEDERAL REGISTER issue for Saturday, January 3, 1970, pages 89, 91, and 96 respectively (35 F.R. 84) are not correct as they now stand and are corrected as follows:

1. By changing the word "conduction" appearing in the third sentence of paragraph III (e) of Appendix A to Part 61 to read: "conjunction."
2. By changing the word "checks" appearing in § 121.400(c)(6) to read: "functions."
3. By changing the language in the amendatory introduction of Item 14 to read: "By amending paragraph (a) of § 121.463 to read as follows:"

Issued in Washington, D.C., on February 5, 1970.

D. D. THOMAS,  
*Acting Administrator.*

(As published in the Federal Register  
/35 F.R. 2818/ on Feb. 11, 1970)