

Title 14—Aeronautics and Space  
**CHAPTER I—FEDERAL AVIATION ADMINISTRATION, DEPARTMENT OF TRANSPORTATION**

[Docket No. 10462; Amends. No. 61-62;  
121-106]

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

**PART 121—CERTIFICATION AND OPERATIONS: DOMESTIC, FLAG AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT**

**Flight Training and Flight Checking Requirements**

The purpose of this amendment to Parts 61 and 121 of the Federal Aviation Regulations is to change certain flight training and flight checking requirements prescribed by those parts; to clarify certain requirement of Subpart N of Part 121 with respect to the requirement for FAA-approved check airmen used in training programs under Part 121; and to amend the proficiency check requirements of Subpart O to permit, under certain conditions, the entire proficiency check to be conducted in an approved visual simulator if the pilot being checked accomplished two actual landings in the appropriate airplane.

This amendment is based on a notice of proposed rulemaking (Notice 73-23) issued on August 24, 1973 and published in the Federal Register on September 5, 1973 (38 FR 23962). Interested persons have been afforded an opportunity to participate in the making of these amendments, and due consideration has been given to all comments received in response to that notice.

In response to a number of petitions for rulemaking and recommendations received from the Air Transport Association of America (ATA), Western Airlines (WAL), American Airlines (AAL), and United Airlines (UAL), and pursuant to a continuing review by FAA of flight training and checking, and type rating programs, the FAA decided to issue Notice 73-23 which proposed changes to those programs that would permit more extensive use of flight simulators and training devices and would eliminate or clarify certain other requirements.

Insofar as the changes contained in this amendment are responsive to amendments petitioned for by ATA on May 13, 1971, and June 16, 1972, by WAL on April 21, 1971, by AAL on October 26, 1970, by UAL on May 6, 1971, and June 8, 1971, this amendment should be considered as a partial grant of the rulemaking petitioned for. Changes or amendments recommended by the petitioners which are not included in this amendment continue to be studied and will be treated further at a later time by rulemaking or otherwise.

No attempt has been made to identify those changes recommended by individual petitioners, or those which the FAA proposed on its own initiative. The changes made herein are calculated to

make training and checking programs more efficient and more effective through selectively increased utilization of simulators and training devices.

The FAA has previously indicated its awareness of the rapidly developing field of simulator technology. Amendment 121-55 (35 FR 84, January 3, 1970), effective on February 2, 1970, which amended Part 61 and Part 121 training programs, stated that the FAA would continue to explore possibilities for translating that new technology into regulations which provide for the safest and most effective training programs possible. Recent operating experience and conclusions drawn from FAA surveillance of training and check programs support the validity of that policy, and the proposals contained in Notice 73-23 were made in furtherance of that policy.

Pursuant to an exemption from the requirements of § 121.424(b) and paragraph II(d) of Appendix E to Part 121 (Exemption No. 1318, issued May 14, 1971, and Exemption No. 1318B, issued December 10, 1971), issued in response to an ATA petition (on behalf of American, Delta, Eastern, Ozark, Pan American, Piedmont, Trans World, and United Airlines), initial, upgrade, and transition flight training on takeoffs with a simulated failure of the most critical powerplant (after V<sub>1</sub> and before V<sub>R</sub>) was conducted by these air carriers, with extensive use of visual and nonvisual simulators. This test training program was completed on May 20, 1972, and was conducted in an attempt to validate the theory that a satisfactory transfer of learning from the simulator to the airplane occurred when training in the "engine-out" maneuver was conducted in a visual or nonvisual simulator.

The training program and study was conducted subject to certain conditions and limitations, as follows: (1) Each pilot trained under the exemption received V<sub>1</sub> engine-out training to proficiency in a visual simulator, a non-visual simulator, or an airplane at altitude; (2) each pilot performed a minimum of one V<sub>1</sub> engine-out maneuver in the airplane during a PIC type rating flight test or second in command qualification flight check; (3) if a pilot's first V<sub>1</sub> engine-out maneuver was unsatisfactory, it was counted as a failure for purposes of the test program (unless not the result of gross error and subject to retesting in the maneuver later in the flight test); if a second engine-out maneuver was performed unsatisfactorily, the pilot was issued a Notice of Disapproval of Application (FAA Form 8060-5) for an ATR or type rating; (4) pilots whose performance of the engine-out maneuver was unsatisfactory during the flight test in the airplane were required to be retrained in accordance with the certificate holders' approved training program; (5) the acceptable level of performance was that level applicable to the conduct of maneuvers required by Appendix A to Part 61; (6) data collection and compilation was made in a form and manner satisfactory to the Administrator.

Guidelines for performance evaluation by Airmen Certification Inspectors were issued (FAA Order 8430.9, June 18, 1971).

Data on 1,098 pilots trained and checked during the program was compiled. Of that number 715 (361 PIC's and 354 SIC's) were trained in the visual simulator, 376 (144 PIC's and 232 SIC's) were trained in the non-visual simulator, and seven were trained in the airplane at altitude. Flight checking resulted in 54 failures with an overall failure rate of 4.9 percent, which the FAA considers to be an acceptable value, validating the "transfer of learning" theory and supporting the changes proposed herein permitting more extensive use of the visual simulator and non-visual simulator. The program results indicate that training on the engine-out maneuver can be successfully conducted in either the visual or non-visual simulator. However, since a higher failure rate of 7.8 percent was indicated for 204 pilots transitioning to airplanes with engines mounted in dissimilar positions (i.e., fuselage-mounted to wing-mounted), and for initial training (i.e., prop to jet), and because there is some degree of difficulty in assessing pilot performance of this VFR maneuver in a non-visual simulator, it is felt that training and checking for this maneuver, with certain specified exceptions, ought to be conducted in a visual simulator.

Comprehensive and constructive comments were submitted in response to Notice 73-23 by the Air Line Pilots Association (ALPA) and by the Air Transport Association of America (ATA) in response to the notice. In addition, conferences were had with both organizations to discuss certain of the comments and recommendations made. To the extent that comments or recommendations received were beyond the scope of the notice, they are not discussed or treated herein. However, they will be considered as part of FAA's continuing study of flight training and checking requirements, with a view to future rule making.

A clarifying amendment to § 121.401 of part 121 has been made to make it clear that check airmen required to be provided in a training program must be "approved" check airmen.

The notice contained a proposal to amend § 121.441 to permit the entire proficiency check (other than the initial second-in-command proficiency check) to be conducted in an approved visual simulator, if the pilot being checked accomplishes at least two landings in the appropriate airplane during a line check or other flight check conducted by a pilot check airman, and to require that if a pilot proficiency check is conducted in accordance with this provision the next required proficiency check would have to be conducted in the same manner, or in accordance with the various and specific requirements of Appendix F of Part 121, and substitution of a course of training in an airplane simulator under § 121.409 would not be permitted. It was anticipated that this provision would afford substantial efficiencies and advantages in

(As published in the Federal Register /38 F.R. 35443/ on December 28, 1973)

simulator use and in airplane utilization if line checks are conducted with the same frequency as required proficiency checks. The two required landings could be accomplished on a check flight other than a line check, at the option of the certificate holder.

Comments received indicated that delays in completion of two required landings by the second-in-command under the observation of a check airman might be anticipated, due to the fact that operating circumstances might dictate that the pilot-in-command accomplish the landing when a check airman was aboard to observe the SIC landing. It was also recommended that the course of training in a non-visual simulator under § 121.409 be retained as a substitution option under § 121.441.

In order to alleviate the problem of delays in the accomplishment of the required landings by the SIC, a provision has been made to permit the PIC to observe and certify such landings as satisfactory. FAA agrees that a course of training under § 121.409 is a satisfactory alternate for the proficiency check, but does not believe that the non-visual simulator is adequate for these purposes. Accordingly, the course of training in a visual simulator has been included as an alternate substitution option.

The notice contained a proposal that the oral equipment examination might be waived by the person conducting the check if the applicant had satisfactorily completed, within the preceding 60 days, a Part 121 approved training program that included training in a cockpit procedural trainer or simulator. Comments received recommended deletion of the oral equipment examination requirement, based on the reliable quality of current training programs, and citing inconsistency in the exercise of the waiver provisions. The FAA believes that the oral equipment examination is a valid checking technique and should be continued. However, on reconsideration it appears that the proposed amendment might be unwieldy and that the requirement should be retained as currently stated in Appendix A to Part 61.

Appendix A of Part 61 has been amended by changing the references to "§ 61.147(c)" to "§ 61.157(c)," the appropriate section in the revised Part 61 which became effective on November 1, 1973.

The amendments to Appendix A of Part 61 (Practical Test Requirements for Airline Transport Pilot Certificates and Associated Class and Type Ratings), and Appendices E (Flight Training Requirements) and F (Proficiency Check Requirements) of Part 121, and significant comment received in response to the notice, are discussed below:

#### APPENDIX A TO PART 61

**Paragraph II(d).** For additional type rating in an airplane group with engines mounted in similar positions or from wing-mounted engines to aft fuselage-mounted engines the takeoff with failure of the most critical power plant may be performed in a non-visual simulator.

A comment received in response to the notice suggested that all V<sub>1</sub> engine failures be performed in a non-visual simulator. FAA does not consider that the non-visual simulator provides realistic simulation for all aircraft, in all powerplant failure situations, and that the provision should be amended as proposed.

**Par. III(c)(2).** Performance of the manually controlled ILS approach is permitted in a visual simulator in lieu of inflight. However, either the normal ILS approach or the manually controlled ILS approach must be performed in flight.

Comments received recommended that the requirement for performing one missed approach in flight be deleted, since the ILS approaches required under III(c)(1) and (2) are permitted in the visual simulator and since the missed approach maneuver is typically performed following an ILS approach. The FAA agrees that the sequence is typical and feels that at least one approach and missed approach in flight are essential to practical testing. Accordingly, a flush paragraph has been added to paragraph III(c) to indicate that either the normal or manually controlled ILS approach must be performed in flight. Thus, the inflight missed approach required under III(e) may be performed in sequence following the ILS approach performed in flight.

**Par. III(d).** The circling approach maneuver is not required for a pilot employed by a certificate holder subject to the operating rules of Part 121 if the certificate holder's manual prohibits a circling approach to be conducted in weather conditions below 1,000-3 (ceiling and visibility).

**Par. V(b).** The landing in sequence from an ILS approach is permitted in a visual simulator in lieu of inflight, and where a simulator approved for the landing maneuver out of an ILS approach is used, the approach may be continued through the landing, and credit given for one of the three landings required by Section V. The person conducting the check may require the maneuver to be performed in flight.

**Par. V(d).** The maneuver to a landing with simulated powerplant failure would be permitted in a visual simulator for all airplanes (formerly permitted only in 3-engine airplanes). The person conducting the check may require the maneuver to be performed in flight.

In response to comments received, the provision which allows a flight instructor in an approved training program under Part 121 to certify satisfactory performance of the 50 percent powerplant failure maneuver for 4-engine turbojet airplanes in lieu of performing the maneuver during the type rating check has been retained, and this option may be exercised until January 1, 1975.

**Par. V(e).** The circling approach maneuver is not required for a pilot employed by a certificate holder subject to the operating rules of Part 121 if the certificate holder's manual prohibits a circling approach in weather conditions below 1,000-3 (ceiling and visibility).

**Par. V(g).** The zero-flap visual approach is not required if the Administrator has determined that the probability of flap extension failure on a specific airplane type is extremely remote due to system design. In making this determination, the Administrator determines whether checking on slats-only and partial-flap approaches is necessary, based on the evaluation of an FAA Flight Operations Evaluation Board.

#### APPENDIX E TO PART 121

**Par. II(d).** Takeoffs with a simulated failure of the most critical powerplant is permitted to be accomplished in a visual simulator in place of the former requirement that they be performed in flight. For transition training in an airplane group with engines mounted in similar positions, or from wing-mounted engines, the maneuver could be performed in a nonvisual simulator.

**Par. II(e).** Rejected takeoffs to be accomplished during a normal takeoff run are permitted in a nonvisual simulator in lieu of inflight. In addition, in response to comments received, a flush paragraph has been added to paragraph II which requires that training in at least one takeoff required under paragraph II be accomplished at night. For transitioning pilots, this requirement may be met during the operating experience required under § 121.434 by performing a normal takeoff when a check airman serving as PIC is occupying a pilot station.

**Par. III(a), (b), (e), (f), (10) and (11).** Flight maneuvers and procedures under these paragraphs may all be accomplished in a nonvisual simulator.

**Par. III(1).** Transition and upgrade training in ILS instrument approaches is permitted in a visual simulator in lieu of inflight.

**Par. III(m)(1) and (2).** Training in nonprecision approaches under III(m)(1) is permitted in a training device in lieu of the present requirement for such training in a visual simulator. The additional nonprecision instrument approach and missed approach required under III(m)(2) may be performed in a visual simulator.

Comments received advocated training for all nonprecision approaches in a training device if the certificate holder does not have a simulator. The FAA believes that training in at least one nonprecision approach should be accomplished in the cockpit environment afforded by an airplane simulator.

**Par. III(n).** Transition and upgrade training in circling approaches is permitted in a visual simulator in lieu of the former inflight requirement. In response to comments received, the maneuver is not required for a pilot employed by a certificate holder subject to the operating rules of Part 121 if its manual prohibits a circling approach in weather conditions below 1,000-3 (ceiling and visibility), and for a SIC if the certificate holder's manual prohibits the SIC from performing a circling approach in operations under Part 121.

**Par. III(o).** Transition and upgrade training in zero-flap approaches is permitted in a visual simulator in lieu of

the former inflight requirement. Training in the zero-flap maneuver would not be required if the Administrator has determined that the probability of flap extension failure on that type airplane is extremely remote due to system design. In making this determination, the Administrator determines whether training on slats-only and partial-flap approaches is necessary, based on the evaluation of an FAA Flight Operations Evaluation Board. The zero-flap approach requirement for the SIC has been deleted as unnecessary (inadvertently inserted in previous amendment).

Par. III(p). Transition and upgrade training in missed approaches from ILS approaches is permitted in the visual simulator in lieu of the former inflight requirement. All training in other missed approaches and missed approaches that include a complete approved missed approach procedure is permitted in a training device in lieu of the former visual simulator requirement. Transition and upgrade training in missed approaches that include a powerplant failure is permitted in a visual simulator in lieu of the former inflight requirement.

Comments received suggested that use of a visual simulator for a missed approach was unrealistic since the probable reason for a missed approach is not sighting the runway at DH or MDA. FAA believes that the requirements as now stated give balanced emphasis to procedural and operational aspects of the missed approach maneuver.

Par. IV(b) and (c). The requirement for the SIC to accomplish the landing and go-around with the horizontal stabilizer out of trim has been deleted as unnecessary (inadvertently inserted in previous amendment). Transition and upgrade training for landing in sequence from an ILS instrument approach is permitted in a visual simulator in lieu of the former inflight requirement.

Par. IV(e). Transition and upgrade training in maneuvering to a landing with simulated powerplant failure in all airplanes is permitted in a visual simulator (formerly permitted only in 3-engine airplanes).

The maneuver is not required for the SIC in initial and transition training, or for the flight engineer in upgrade training. In response to comments received, the requirement for maneuvering in flight at altitude with an approved procedure that approximates the loss of two powerplants has been deleted, since the maneuver may be realistically performed in a visual simulator and the inflight requirement would be redundant. Paragraph IV(e) has been restructured for clarity.

Par. IV(f). Transition and upgrade training for landing under simulated circling approach conditions is permitted in a visual simulator in lieu of the former inflight requirement. Exceptions under paragraph III(n) are applicable to this requirement.

Par. IV(g). Transition and upgrade training in rejected landings is permitted

in a visual simulator in lieu of the former inflight requirement.

Par. IV(h). Transition and upgrade training in zero-flap landings is permitted in a visual simulator in lieu of the former inflight requirement.

#### APPENDIX F TO PART 121

Par. II(d). In an airplane with aft fuselage-mounted engines; the takeoff maneuver with failure of the most critical powerplant is permitted in a nonvisual simulator in lieu of a visual simulator.

Par. III(d). The circling approach maneuver is not required for a second-in-command if the certificate holder's manual prohibits a second-in-command from performing a circling approach in operations under Part 121.

In response to comments received the "local conditions" waiver provision has been retained. Deletion was not intended.

Par. III(e). The symbols "B" and "P" are deleted from the "Inflight" column (as superfluous), and the symbol associated with III(e) (1) in the "Visual Simulator" column changed to "B". At least one missed approach would be required to be performed in flight.

Par. V(d). The maneuver to a landing with simulator powerplant failure is permitted in a visual simulator for all airplanes (formerly permitted only in 3-engine airplanes). For other than the pilot-in-command, the maneuver may be performed with a simulated loss of power of the most critical powerplant only.

In response to comments received, the provision for performing the maneuver inflight at altitude or in an approved simulator for 4-engine turbojet air-

planes has been extended to January 1, 1975, to accommodate certificate holders that do not now have adequate availability of visual simulators, and to allow sufficient time for certificate holders to procure or arrange for the use of such equipment.

Since this amendment imposes no additional burden on any person and relieves restrictions in effect prior to this amendment, I find that good cause exists under 5 U.S.C. § 553(d) (3) for making this amendment effective on less than 30 days' notice.

(Secs. 313(a), 601, 602, 604, and 607, Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421, 1422, and 1427); sec. 8(c), of Department of Transportation Act (49 U.S.C. 1655(c)).)

In consideration of the foregoing, Parts 61 and 121 of the Federal Aviation Regulations are amended, effective December 19, 1973, as set forth below.

Issued in Washington, D.C., on December 19, 1973.

ALEXANDER P. BUTTERFIELD,  
Administrator.

1. By striking the reference to "§ 61.147 (c)" that appears in the heading of the last column, and in the flush paragraphs following paragraphs III(a), III(d), and IV(b), in Appendix A to Part 61, and by inserting in lieu thereof the reference "§ 61.157(c)."

2. By amending paragraphs II(d), III(c) (2), III(d), V(b), V(d), V(e), and V(g) of Appendix A to Part 61 to read as follows:

#### APPENDIX A

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

Maneuver/procedures	Required in airplane		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Nonvisual simulator	Training device	Waiver provisions of § 61.157(c)
II. Takeoffs.						
#(d) Powerplant failure. 1 takeoff with a simulated failure of the most critical powerplant—			X			
(1) At a point after $V_1$ and before $V_2$ that in the judgment of the person conducting the check is appropriate to the airplane type under the prevailing conditions; or						
(2) At a point as close as possible after $V_1$ when $V_1$ and $V_2$ or $V_1$ and $V_R$ are identical; or						
(3) At the appropriate speed for nontransport category airplanes.						
For additional type rating in an airplane group with engines mounted in similar positions or from wing-mounted engines to aft fuselage-mounted engines this maneuver may be performed in a nonvisual simulator.						
III. Instrument Procedures.						
(c) #2 At least 1 manually controlled ILS approach with a simulated failure of 1 powerplant. The simulated failure should occur before initiating the final approach course and must continue to touchdown or through the missed approach procedure. However, either the normal ILS approach or the manually controlled ILS approach must be performed in flight.	X		X			
(d) (1) . . . . .						
(2) . . . . .						
(3) . . . . .						
When the maneuver is performed in an airplane, it may be waived as provided in § 61.157(c) if local conditions beyond the control of the pilot prohibit the maneuver or prevent it from being performed as required.						

Maneuver/procedures	Required in airplane		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Nonvisual simulator	Training device	Waiver provisions of § 61.157(c)
<p>The circling approach maneuver is not required for a pilot employed by a certificate holder subject to the operating rules of pt. 121 of this chapter, if the certificate holder's manual prohibits a circling approach in weather conditions below 1000-3 (ceiling and visibility).</p> <p>V. Landings and Approaches to Landings.</p> <p>§(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. In addition, where a simulator approved for the landing maneuver out of an ILS approach is used, the approach may be continued through the landing and credit given for 1 of the 3 landings required by this section.</p> <p>§(d) Maneuvering to a landing with simulated powerplant failure, as follows:</p> <p>(1) In the case of 3-engine airplanes, maneuvering to a landing with an approved procedure that approximates the loss of 2 powerplants (center and 1 outboard engine); or</p> <p>(2) In the case of other multiengine airplanes, maneuvering to a landing with a simulated failure of 50 percent of available powerplants, with the simulated loss of power on one side of the airplane. However, before Jan. 1, 1978, in the case of a 4-engine turbojet-powered airplane, maneuvering to a landing with a simulated failure of the most critical powerplant may be substituted therefor, if a flight instructor in an approved training program under pt. 121 of this chapter certifies to the Administrator that he has observed the applicant satisfactorily perform a landing in that type airplane with a simulated failure of 50 percent of the available powerplants. The substitute maneuver may not be used if the Administrator determines that training in the 2-engine out landing maneuver provided in the training program is unsatisfactory.</p> <p>If an applicant performs this maneuver in a visual simulator, he must, in addition, maneuver in flight to a landing with a simulated failure of the most critical powerplant.</p> <p>§(e) Except as provided in par. (f), landing under simulated circling approach conditions except that 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.</p> <p>The circling approach maneuver is not required for a pilot employed by a certificate holder subject to the operating rules of pt. 121 of this chapter, if the certificate holder's manual prohibits a circling approach in weather conditions below 1000-3 (ceiling and visibility).</p> <p>§(g) A zero-flap visual approach to a point where, in the judgment of the person conducting the check, a landing to a full stop on the appropriate runway could be made. This maneuver is not required for a particular airplane type if the Administrator has determined that the probability of flap extension failure on that type is extremely remote due to system design. In making this determination, the Administrator determines whether checking on slats only and partial flap approaches is necessary.</p>			X*			
			X*			
			X*			
			X*			

3. By amending § 121.401(a)(4) of Part 121 to read as follows:

**§ 121.401 Training program: General.**

(a) . . . .

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

. . . . .

4. By amending § 121.441 by adding a new flush paragraph following paragraph (e) to read as follows:

**§ 121.441 Proficiency checks.**

. . . . .

(e) . . . .

However, the entire proficiency check (other than the initial second-in-command proficiency check) required by this section may be conducted in an approved visual simulator if the pilot being checked accomplishes at least two land-

ings in the appropriate airplane during a line check or other check conducted by a pilot check airman (a pilot-in-command may observe and certify the satisfactory accomplishment of these landings by a second-in-command). If a pilot proficiency check is conducted in accordance with this paragraph, the next required proficiency check for that pilot must be conducted in the same manner, or in accordance with Appendix F of this Part, or a course of training in an airplane visual simulator under § 121.409 may be substituted therefor.

5. By amending paragraphs II(d); II(e); III(a), (b), (e), and (f) (10) and (11); III(1); III(m) (1) and (2); III(n); III(o); III(p); IV(b); IV(c); IV(e); IV(f); IV(g); IV(h); IV(i); and the flush paragraphs following paragraph IV, of Appendix E to Part 121 to read as follows:

**APPENDIX E  
FLIGHT TRAINING REQUIREMENTS**

. . . . .

Maneuvers/Procedures	Initial tr.					Transition tr.					Upgrade tr.				
	A/P		Simu.			A/P		Simu.			A/P		Simu.		
	Infight	Static	Visual simulator	Nonvisual simulator	Training device	Infight	Static	Visual simulator	Nonvisual simulator	Training device	Infight	Static	Visual simulator	Nonvisual simulator	Training device
APPENDIX E															
II. Takeoffs:															
(d) Takeoffs with a simulated failure of the most critical powerplant—			B					AT					BU		
(1) At a point after $V_1$ and before $V_2$ that in the judgment of the person conducting the training is appropriate to the airplane type under the prevailing conditions; or															
(2) At a point as close as possible after $V_1$ when $V_1$ and $V_2$ or $V_1$ and $V_R$ are identical; or															
(3) At the appropriate speed for nontransport category airplanes.															
For transition training in an airplane group with engines mounted in similar positions, or from wing-mounted engines to aft fuselage-mounted engines, the maneuver may be performed in a nonvisual simulator.															
(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					BU		
Training in at least one of the above takeoffs must be accomplished at night. For transitioning pilots this requirement may be met during the operating experience required under § 121.434 of this part by performing a normal takeoff at night when a check airman serving as pilot-in-command is occupying a pilot station.															
III. Flight Maneuvers and Procedures:															
(a) Turns with and without spoilers.....			B					AT					BU		
(b) Tuck and Mach buffet.....			B					AT					BU		
(c) * * *.....															
(d) * * *.....															
(e) Runaway and jammed stabilizer.....			B					AT					BU		
(f) Normal and abnormal or alternate operation of the following systems and procedures:															
(1) * * *.....															
(2) * * *.....															
(3) * * *.....															
(4) * * *.....															
(5) * * *.....															
(6) * * *.....															
(7) * * *.....															
(8) * * *.....															
(9) * * *.....															
(10) Automatic or other approach aids.....			B					AT					BU		
(11) Stall warning devices, stall avoidance devices, and stability augmentation devices.....			B					AT					BU		
(1) ILS instrument approaches that include the following:															
(1) Normal ILS approaches.....	B					AT					BU		BU		
(2) Manually controlled ILS approaches with a simulated failure of one powerplant which occurs before initiating the final approach course and continues to touch down or through the missed approach procedure.	B							AT					BU		
(m) Instrument approaches and missed approaches other than ILS which include the following:			B		B			AT		AT			BU		BU
(1) Nonprecision approaches that the trainee is likely to use.....															
(2) In addition to subparagraph (1) of this paragraph, at least one other nonprecision approach and missed approach procedure that the trainee is likely to use.															
(n) Circling approaches which include the following:	B							AT					BU		
(1) * * *.....															
(2) * * *.....															
(3) * * *.....															
Training in the circling approach maneuver is not required for a pilot employed by a certificate holder subject to the operating rules of pt. 121 of this chapter if the certificate holder's manual prohibits a circling approach in weather conditions below 1000-3 (ceiling and visibility); for a SIC if the certificate holder's manual prohibits the SIC from performing a circling approach in operations under this part.															
(o) Zero-flap approaches. Training in this maneuver is not required for a particular airplane type if the Administrator has determined that the probability of flap extension failure on that type airplane is extremely remote due to system design. In making this determination, the Administrator determines whether training on slats only, and partial flap approaches is necessary.	P							PP					PS		
(p) Missed approaches which include the following:															
(1) Missed approaches from ILS approaches.....	B							AT					BU		
(2) Other missed approaches.....															
(3) Missed approaches that include a complete approved missed approach procedure.					B					AT					BU
(4) Missed approaches that include a powerplant failure.....	B							AT					BU		
IV. Landings and Approaches to Landings:															
(b) Landing and go around with the horizontal stabilizer out of trim.....	P							PJ					PS		
(c) Landing in sequence from an ILS instrument approach.....	B							PP					BU		
(d) * * *.....								AT							
(e) Maneuvering to a landing with simulated powerplant failure, as follows:	P							PJ					PS		
(1) Except as provided in subparagraph (3) of this paragraph, in the case of 3-engine airplanes, maneuvering to a landing with an approved procedure that approximates the loss of two powerplants (center and one out-board engine).															

Maneuvers/Procedures	Initial tr.					Transition tr.					Upgrade tr.				
	A/P		Simu.			A/P		Simu.			A/P		Simu.		
	Infight	Static	Visual simulator	Nonvisual simulator	Training device	Infight	Static	Visual simulator	Nonvisual simulator	Training device	Infight	Static	Visual simulator	Nonvisual simulator	Training device
<p>(2) Except as provided in subparagraph (3) of this paragraph, in the case of other multiengine airplanes, maneuvering to a landing with a simulated failure of 50 percent of available powerplants, with the simulated loss of power on one side of the airplane.</p> <p>(3) Notwithstanding the requirements of subparagraphs (1) and (2) of this paragraph, flight crewmembers who satisfy those requirements in a visual simulator must also:</p> <p>(i) Take infight training in one-engine inoperative landings; and</p> <p>(ii) In the case of a second-in-command upgrading to a pilot-in-command and who has not previously performed the maneuvers required by this paragraph in flight, meet the requirements of this paragraph applicable to initial training for pilots-in-command.</p> <p>(4) In the case of flight crewmembers other than the pilot-in-command, perform the maneuver with the simulated loss of power of the most critical powerplant only.</p> <p>(f) Landing under simulated circling approach conditions (exceptions under III(n) applicable to this requirement).</p> <p>(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 feet and approximately over the runway threshold.</p> <p>(h) Zero-fuel landings if the Administrator finds that maneuver appropriate for training in the airplane.</p> <p>(i) Manual reversion (if appropriate).</p> <p>Training in landings and approaches to landings must include the types and conditions provided in IV(n) through (i) but more than one type may be combined where appropriate.</p> <p>Training in one of the above landings must be accomplished at night. For transitioning pilots, this requirement may be met during the operating experience required under § 121.434 of this part by performing a normal landing when a check pilot serving as pilot-in-command is occupying a pilot station.</p>	P							PJ, PP					PS		
	B							AT					BU		
	B							AT					BU		
	P		B					PP, PJ, AT					PS, BU		
	B					AT					BU				

6. By amending paragraphs II(d), III(d), III(e), V(d) of Appendix F to Part 121 to read as follows:

APPENDIX F  
PROFICIENCY CHECK REQUIREMENTS

Maneuver/procedures	Required		Permitted			
	Simulated instrument conditions	Insight	Visual simulator	Non-visual simulator	Training device	Waiver provisions of § 121.441(c)
II. Takeoffs.						
(d) Powerplant failure. One takeoff with a simulated failure of the most critical powerplant— (1) At a point after V <sub>1</sub> and before V <sub>2</sub> that in the judgment of the person conducting the check is appropriate to the airplane type under the prevailing conditions; or (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>R</sub> are identical; or (3) At the appropriate speed for non-transport category airplanes. In an airplane group with aft fuselage-mounted engines this maneuver may be performed in a non-visual simulator.			B*			
III. Instrument Procedures.						
(d) * * * (1) * * * (2) * * * (3) * * *			B*			B*
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). Provided, however, that the maneuver may not be waived under this provision for two successive proficiency checks. The circling approach maneuver is not required 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.						
(e) Missed approach (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			B*	F*		

Maneuver/procedures	Required		Permitted			
	Simulated instrument conditions	Inflight	Visual simulator	Non-visual simulator	Training device	Waiver provisions of § 121.441(d)
<p>V. Landings and approaches to landings.</p> <p>(d) Maneuvering to a landing with simulated powerplant failure as follows:</p> <p>(1) In the case of 3-engine airplanes, maneuvering to a landing with an approved procedure that approximates the loss of two powerplants (center and one outboard engine); or</p> <p>(2) In the case of other multi-engine airplanes, maneuvering to a landing with a simulated failure of 50 percent of available powerplants, with the simulated loss of power on one side of the airplane. However, before January 1, 1975, for 4-engine turbojet airplanes, this maneuver may be performed in an approved simulator or in flight at altitude, unless the Administrator determines that the training in this maneuver by the certificate holder is unsatisfactory.</p> <p>Notwithstanding the requirements of subparagraphs (d)(1) and (2) of this paragraph, in a proficiency check for other than a pilot-in-command, the simulated loss of power may be only the most critical powerplant. However, if a pilot satisfies the requirements of subparagraphs (d)(1) or (2) of this paragraph in a visual simulator, he must, in addition, maneuver in flight to a landing with a simulated failure of the most critical powerplant.</p>			B*			
			B*			