

Title 14—AERONAUTICS AND SPACE

Chapter I—Federal Aviation Agency

[Docket Nos. 7201, 7493; Amdt. Nos. 61-27,
91-36, 121-24]

PART 61—CERTIFICATION: PILOTS AND FLIGHT INSTRUCTORS

PART 91—GENERAL OPERATING AND FLIGHT RULES

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

Flight Maneuvers

The purpose of this amendment is to revise and update the flight maneuvers required by Part 61 of the Federal Aviation Regulations for airline transport pilot certificates and associated ratings and by Part 121 of the Federal Aviation Regulations for training and proficiency checks.

This amendment was originally proposed as a notice of proposed rule making issued as Notice 66-6 and published in the FEDERAL REGISTER on March 19, 1966 (31 F.R. 4735). Almost all of the comments received were in general agreement with the Agency's stated purpose to revise and update the flight maneuvers required of applicants for airline transport pilot certificates and associated ratings and for proficiency flight checks under Federal Aviation Regulation Part 121. There were, however, numerous specific comments, many of which objected to particular items contained in Notice 66-6. The more significant of the comments received and the Agency's disposition thereof, are discussed below.

Retesting after failure. Probably the most controversial proposal contained in Notice 66-6 was the deletion of the provision in § 61.27(d) authorizing an applicant who has failed any flight maneuvers during an airline transport pilot (ATR) flight test to repeat only the failed maneuvers. The comments on this proposal

ranged from wholehearted endorsement to objections that appear to have been based somewhat on a misunderstanding of the intent of the proposed change. As indicated in the notice, the Agency's primary intent was to prevent an applicant from obtaining an airline transport pilot certificate or associated rating by passing the flight test on a piecemeal basis. The Agency did not propose to automatically require retesting of all maneuvers, upon failure of any one maneuver. Rather, the Agency proposed to give the person conducting the test the authority to require retesting on maneuvers, in addition to the maneuver failed, where, in his judgment, such retesting is necessary to determine the competency of the applicant for an ATR or associated rating. For example, if an applicant failed only one maneuver while performing all other maneuvers with a high degree of skill, the Agency would not normally expect the inspector to require retesting of more than the failed maneuver. However, where an applicant failed several maneuvers, it would be reasonable for the inspector to require the applicant to repeat more than the failed maneuvers before the inspector would be willing to affirm that the applicant has demonstrated the overall high level of competence and judgment required of an applicant for an ATR or associated rating. The same reasoning would apply in the case of a Part 121 proficiency check.

Crew complement. Several comments were addressed to the Agency's proposal to prohibit the conduct of a proficiency flight check unless the pilot seated at the controls other than the pilot being checked is fully qualified to act as pilot in command of the airplane. Some of the comments were concerned that this proposal would prohibit the type of situation where the check airman would occupy the jump seat while both pilots at the controls were being checked, one as pilot in command, the other as second in command. The Agency agrees that the proposed limitation would have the effect of prohibiting this method of checking. Nevertheless, the Agency believes that during Part 121 proficiency checks and flight tests for ATR and as-

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1804 [1262]

sociated ratings, the pilot seated at the controls, other than the pilot being checked, should be fully qualified to act as pilot in command of the airplane. This prohibition is therefore being adopted. While the notice did not propose to extend this prohibition to ATR and type rating flight tests, their inclusion, as a practical matter, should not impose any substantial additional burden since, under present § 91.21(b), for simulated instrument flight an "appropriately rated pilot" must occupy the other control seat as safety pilot. Section 91.21(b) has been interpreted to require a private pilot certificate with an airplane category rating and multiengine class rating for a small multiengine land plane, and a type rating for a large airplane or for a turbojet powered airplane (large or small). Therefore, the practical effect of this additional limitation is merely to require for all of the maneuvers a safety pilot, as qualified, as is now required for the simulated instrument maneuvers. In view of the relationship to § 91.21 this provision is included as a new paragraph in that section rather than as a new section. The authorization, proposed in the notice, to permit a pilot who has completed an air carrier training program and who is fully qualified to act as second in command to be seated at the control during certain maneuvers is not being adopted.

General organization. Several comments objected to what they felt was an unwarranted emphasis on the Part 121 significance of the material discussed in Notice 66-6. Part of these objections may have resulted from the organization of the proposed maneuvers in the notice. As adopted in this amendment, Part 61 of the Federal Aviation Regulations will contain an Appendix A that sets forth the maneuvers required for an airline transport pilot certificate and associated ratings. With the exception of the partial waiver authority (which is discretionary with the person conducting the flight test) contained in § 61.147(c), the flight test requirements are identical without regard to whether the applicant is at that time employed by a Part 121 certificate holder.

In place of the three phase breakdown proposed in Notice 66-6, this amendment organizes the required maneuvers into a chronological preflight, takeoff, enroute, landing, sequence. In accomplishing this reorganization, numerous nonsubstantive changes from the notice have been made. Also, as was indicated in Notice 66-6, this amendment revises the training program requirements of Part 121 to reflect the changes in the required maneuvers. As a result of these changes, it has been possible to consolidate the pilot training requirements formerly contained in §§ 121.418, 121.419, and 121.420 into two sections. Similarly, the proficiency check requirements formerly contained in §§ 121.441 and 121.449 have been consolidated into § 121.441.

Notice 66-6 stated that the Agency proposed to spell out in detail the minimum standards and procedures for each maneuver. As an example, with respect to "instrument approach procedures" the

Agency proposed to spell out the: (1) Kind of approach required; (2) minimum number of approaches required; (3) manner in which the maneuver is to be demonstrated; and (4) variations (such as simulated powerplant failure) that must be included in the maneuver.

In this regard, the NPRM sought to spell out specific performance limitations and procedural requirements for each required maneuver. For example, with respect to instrument approach and missed approach procedures the notice stated that this maneuver was to include the following:

- (1) Determination of applicable weather minimums, required radio and visual aids, runway conditions and proper planning;
- (2) Proper airplane configuration, airspeed and altitude over the final approach facility.
- (3) Proper airspeed, course, and altitude control from final approach facility to touchdown.
- (4) Proper control of emergency situations encountered during the approach.
- (5) When the applicant elects to use flight director or autocooper, or both, one approach must be made in the normal configuration, without powerplant failure or other emergency simulation, to 100 feet above the ground or water.

Similar details were proposed with respect to most maneuvers. The Agency now believes that while it is important to prescribe specifically the kind and number of required maneuvers and in some cases a description of the maneuver, such detail is not appropriate in all cases. Rather, the Agency believes that it is preferable to include a general requirement that each required maneuver must be performed in accordance with any procedures and limitations, in the applicable approved airplane flight manual, approved check lists (and other approved material applicable to the airplane type), and also with approved en route, instrument approach, missed approach, and ATC, procedures. In the case of proficiency checks under Part 121, compliance with any applicable provisions of the certificate holder's operations manual will also be considered by the person conducting the check.

By including this general requirement, in place of the detail proposed in the notice, the size of the appendices to be added to Parts 61 and 121 is substantially reduced and the problems, inherent in trying to cover all possible airplane types and potential situations that could be met, are eliminated. Also, as new airplanes are introduced into service, any new and different procedures or limitations contained in applicable approved material are automatically applicable to the required flight maneuvers without the necessity of specific amendments to the appendices.

Recognition of approved training programs under Part 121. Comments from both pilot and airline groups stated that the Agency should give further recognition to the training programs established under Part 121 since such programs are approved by the Agency and are under the constant review and surveillance of the Agency. Notice 66-6 proposed to authorize the person giving a type rating or proficiency check to waive the maneu-

vers required in proposed Phase B (except takeoffs and landings) when the pilot being checked is employed as pilot in command or as second in command and has successfully completed an approved training course under Part 121. The Agency agrees that additional recognition can and should be given to the effectiveness of the approved training programs of air carriers and commercial operators operating under FAR Part 121. This amendment, therefore, authorizes the person conducting a practical examination for an ATR, associated class or type rating, or a proficiency check under Part 121, to waive certain specified maneuvers if the person being tested is at that time employed by a Part 121 certificate holder as a pilot and has successfully completed the certificate holder's approved training program for the airplane type involved. In addition to those maneuvers proposed to be covered by the waiver authority in the notice, this amendment authorizes waiver of rejected takeoffs, holding, and specific flight characteristics. However, in this amendment, as was proposed in the notice, the Administrator reserves the right to require certain specific or all maneuvers to be performed.

Use of airplane simulators. Several comments indicated that the Agency should give increased recognition to the use of approved airplane simulators in the conduct of checks required of applicants for ATR's, and associated type ratings, and for proficiency checks under FAR Part 121. The Agency agrees that existing airplane simulators and those that are expected to be available in the near future are adequate for checking many of the required flight maneuvers. Under the present Part 121 requirements and those proposed in Notice 66-6, approved airplane simulators are authorized for use in pilot proficiency checks (after the initial checks). In this amendment the Agency has endeavored to give recognition to the advanced types of simulators now being developed, such that additional maneuvers, not presently authorized to be performed in a simulator (e.g. circling approaches), may be performed in a simulator if the Administrator finds that the applicant's competency can be determined as well in the simulator as in the airplane.

Miscellaneous changes. The Agency agrees with the several commentators who stated that the oral examination portion of the ATR practical examination should remain valid for longer than the 30 days proposed in the notice. While several comments proposed a 90-day period, the Agency believes that 60 days is a reasonable and adequate period to allow an applicant to complete the flight portion of the practical examination.

Several comments indicated that the proposed requirement for at least three full stop landings during an ATR or type rating check would be excessive. The comments indicated that for many existing jet airplanes this requirement could result in excessive delays because of the time needed between the landing and a subsequent takeoff, to allow for the effects of brake heat energy and other

pertinent factors. In recognition of the validity of these comments, this amendment, while continuing to require three actual landings during an ATR or type rating check, requires that only one landing need be to a full stop. Similarly, for initial second in command proficiency checks, while two actual landings are required only one need be to a full stop.

Several comments objected to the inclusion of "balked landing" as a required maneuver. The Agency agrees that the balked landing, as such, is actually a type certification maneuver and in fact intended that a typical "rejected landing" be performed in ATR, type rating, and proficiency checks. This amendment therefore requires a "rejected landing".

Military competency. One comment recommended that Part 61 be amended to award military pilots with multiengine experience, ATR's without type ratings, if they meet the criteria of the applicable provisions of Subpart E of Part 61. This comment also suggested that consideration be given to awarding type ratings based on military check rides alone. Since this proposal is beyond the scope of Notice 66-6, it can not be considered for inclusion in this amendment and its merits will not be specifically discussed herein. However, the comment will be considered in future relevant Part 61 rule-making actions.

Notice 66-25. On July 14, 1966, the Agency issued Notice 66-25 proposing additional operational, training, and minimum experience requirements for pilots of turbojet engine powered airplanes. The comments received generally opposed the need for a regulation to require the specific proposals (i.e. 100 hours as pilot in command of an airplane type before the second in command could take off, approach, or land; 35 landings in an airplane type before a pilot could serve as pilot in command) contained in the notice.

The Agency is now satisfied that, in view of the overall revision in this amendment of the flight maneuvers required for ATR, associated type ratings, and proficiency checks under Part 121, and changes that have been adopted in operations manuals and training programs for specific airplane types, general rule-making action as proposed in Notice 66-25 is unnecessary. Therefore, Notice 66-25 is being withdrawn. Withdrawal of a notice of proposed rule making constitutes only such action, and does not preclude the Agency from issuing another notice in the future or commit the Agency to any course of action in the future.

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

In consideration of the foregoing, Notice 66-25 published in the FEDERAL REGISTER on July 21, 1966 (31 F.R. 9878) is hereby withdrawn and Parts 61, 91, and 121 of the Federal Aviation Regulations are hereby amended effective April 15, 1967, as set forth below.

(Secs. 313(a), 601, 602, 604, Federal Aviation Act of 1958; 49 U.S.C. 1354(a), 1421, 1422, 1424)

Issued in Washington, D.C., on January 3, 1967.

WILLIAM F. MCKEE,
Administrator.

1. The flush paragraph at the end of § 61.27(d) is amended to read as follows:
§ 61.27 Retesting after failure.

* * * * *
(d) * * *

In retesting, the maneuvers failed, and any other maneuvers the FAA inspector or designated examiner finds to be necessary to determine the competency of the applicant, must be repeated. An applicant who meets the requirements of subparagraph (1) or (2) of this paragraph is considered to meet the 5-hour flight time requirements of § 61.145(b) (2) (1).

* * * * *
2. Section 61.147 is amended to read as follows:

§ 61.147 Airplane rating; aeronautical skill.

(a) An applicant for an airline transport pilot certificate with a single-engine or multiengine class rating or an additional type rating must pass a practical test that includes the items set forth in Appendix A of this part. The FAA inspector or designated examiner may modify any required maneuver where necessary for the reasonable and safe operation of the airplane being used and, unless specifically prohibited in Appendix A, may combine any required maneuvers and may permit their performance in any convenient sequence.

(b) Whenever an applicant for an airline transport pilot certificate does not already have an instrument rating he shall, as part of the oral part of the practical test, comply with § 61.37(c), and, as part of the flight part, perform each additional maneuver required by § 61.37(c) (2) that is appropriate to the airplane type and not required in Appendix A of this part.

(c) Unless the Administrator requires certain or all maneuvers to be performed, the person giving a flight test for an airline transport pilot certificate or additional airplane class rating may, in his discretion, waive any of the maneuvers for which a specific waiver authority is contained in Appendix A of this part if a pilot being checked—

(1) Is employed as a pilot by a Part 121 certificate holder; and

(2) Within the preceding 6 calendar months, has successfully completed that certificate holder's approved training program for the airplane type involved.

3. Section 91.21 is amended by amending the heading and by adding a new paragraph (c) to read as follows:

§ 91.21 Flight instruction; simulated instrument flight and certain flight tests.

* * * * *
(c) No person may operate a civil aircraft that is being used for a flight test

for an airline transport pilot certificate or a class or type rating on that certificate, or for a Federal Aviation Regulation Part 121 proficiency flight test, unless the pilot seated at the controls, other than the pilot being checked, is fully qualified to act as pilot in command of the aircraft.

§ 121.420 [Deleted]

4. Section 121.420 is deleted and §§ 121.418 and 121.419 are amended to read as follows:

§ 121.418 Flight training: all pilots.

(a) The initial flight training that the certificate holder must provide for each pilot before he serves as a pilot flight crewmember must include in each type airplane to be flown by him, the approved programmed hours of flight instruction and practice in at least the maneuvers and procedures set forth in Appendix F of this part, and in addition the following:

- (1) Assigned flight duties.
- (2) Takeoffs and landings during day and night in each type of airplane in which he is to serve as a pilot.
- (3) Normal and emergency flight maneuvers in each type of airplane in which he is to serve as a pilot.
- (4) Climbs and climbing turns.
- (5) Maneuvers at minimum speeds.
- (6) Engine shutdown and restart.
- (7) Flight under simulated IFR conditions using each kind of navigation facility used in normal operations.

(b) Each certificate holder shall give each pilot—

(1) Any additional flight training necessary to ensure qualification in new equipment, procedures, or techniques; and

(2) Recurrent training each 12 calendar months consisting of at least the approved programmed hours of flight instruction and practice in the items set forth in Appendix F of this part in each type airplane in which the pilot serves as pilot.

Satisfactory completion of a proficiency check in a particular type airplane under § 121.441 or § 121.442 satisfies the recurrent flight training required by this paragraph in that type airplane.

(c) In addition to the training required by this section, each certificate holder shall provide the additional training required in § 121.419 for each pilot before he serves as pilot in command or second in command.

§ 121.419 Flight training; pilot in command and second in command.

(a) In addition to the initial training required by § 121.418, each certificate holder shall provide for each pilot, before he serves as pilot in command or second in command, the following initial training in each airplane type in which he has not previously qualified:

- (1) Pretakeoff checks.
- (2) Operation of systems and controls at the flight engineer station.

(3) In addition to the specific flight characteristics set forth in Appendix F of this part, if appropriate to training in the particular type airplane, zero flap landings, turns with and without spoils

ers, tuck and Mach buffet, procedures for runaway or jammed stabilizer, landing and go around with the horizontal stabilizer out of trim. If the Administrator finds for a certain turbojet powered airplane that zero flap landings are not appropriate, training in zero flap approaches in that type airplane is required.

(4) In addition to the normal and abnormal procedures set forth in Appendix F of this part, in flight or in a static airplane, airplane simulator, procedures or systems trainer, or other appropriate training device—

(i) As appropriate to the particular type airplane, normal operation of the pressurization, pneumatic, air conditioning, fuel, oil, electronic, electrical, hydraulic, and flight control systems; and

(ii) In-flight emergency procedures, including as appropriate to the particular type of airplane: powerplant, heater, cargo compartment, cabin, flight deck, wing, and electrical fires; smoke removal; electrical, hydraulic, flight control, and flight instrument system malfunction or failures; decompression; and fuel dumping.

(b) Each certificate holder shall give each pilot in command, and each second in command in an operation requiring three or more pilots, at least two periods of recurrent flight training within each 12 calendar month period that together consist of at least the approved programmed hours and that include the maneuvers and procedures set forth in Appendix F of this part. The recurrent training must be given in each type airplane in which the pilot is to retain qualification, except that where a pilot is qualified in more than one type he need only be given one period of training in each type within each 12 calendar month period. Satisfactory completion of a proficiency check in a particular airplane type under § 121.441 or § 121.442 satisfies the recurrent flight training required by this section in that type airplane.

§ 121.449 [Deleted]

5. Section 121.449 is deleted and § 121.441 is amended by amending paragraphs (b), (c), and (d) and by adding new paragraphs (e) and (f) to read as follows:

§ 121.441 Pilot checks.

(b) Proficiency check: Except as provided in paragraphs (c) and (d) of this section, no certificate holder may use a pilot as a required pilot flight crewmember unless he has satisfactorily completed for the Administrator or an approved check pilot a proficiency check that includes the procedures and maneuvers set forth in Appendix F of this part. Thereafter, a pilot may not serve as pilot in command, or as second in command of an operation requiring three or more pilots, unless each 6 calendar months he passes a similar pilot proficiency check. For all other pilot flight crewmembers a similar proficiency check must be satisfactorily completed at least once each 12 calendar months.

(c) For pilots who are not to serve at the flight controls during takeoff or landing, the initial and annual proficiency checks need include only the assigned flight duties (including flight emergencies), approaches to stalls, and the maneuvers and procedures set forth in § 121.418(a) (4) through (7).

(d) Unless the Administrator requires certain or all maneuvers to be performed, the person giving the proficiency check may, in his discretion, waive any of the maneuvers for which a specific waiver authority is set forth in Appendix F of this part, if at the time of the check the pilot being checked is employed by a certificate holder as a pilot and has satisfactorily completed the certificate holder's approved training course for the airplane type 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 in operations under this part until he has satisfactorily shown his proficiency.

(f) In addition to all other required training and checks, no person may serve as a pilot in command on any airplane unless during the preceding 12 calendar months he has passed either a proficiency check or line check in that type airplane.

§ 121.442 [Amended]

6. Section 121.442 is amended as follows:

a. The words "intervals for the proficiency check" are stricken from the lead-in sentence of paragraph (a) and the words "or 12-month intervals, as applicable, for the proficiency checks" are inserted in place thereof.

b. Subparagraph (1) of paragraph (b) and paragraph (c) are amended to read as follows:

(b) * * *

(1) The course must be conducted in an approved simulator appropriate to the particular type of airplane and must include the following:

(i) Each flight maneuver and procedure set forth in Appendix F of this part that is capable of being performed in the approved airplane simulator.

(ii) At least the number of hours of simulator training set forth in column III of Appendix E of this part.

(c) Use of approved airplane simulator as part of required proficiency check. In addition to the authorization contained in paragraph (a) of this section, an approved airplane simulator may be used in the conduct of a proficiency check under § 121.441 as follows:

(1) An approved airplane simulator may be used to conduct all required maneuvers except those specified in Appendix F of this part to be performed in flight.

(2) Except for those maneuvers authorized in Appendix F of this part to be given in a synthetic trainer, those parts of a required proficiency flight check given in an approved airplane simulator under subparagraph (1) of this paragraph must be satisfactorily demonstrated to an approved check airman or the Administrator.

7. The footnotes to Appendix E of Part 121 are amended as follows:

a. The reference "§ 121.441(b)(24)" in footnote (a) is stricken and the reference "paragraph III(c) of Appendix F" is inserted in place thereof.

b. The reference "§ 121.449(c)" in footnote (d) is stricken and the reference "§ 121.442 (a) and (b)" is inserted in place thereof.

8. Part 61 is amended by adding an Appendix A to read as follows:

APPENDIX A

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

The practical examination required by § 61.147 for an airline transport pilot certificate or for an associated airplane class or type rating must include the items set forth in this appendix. Those items indicated by an asterisk (*) must be performed under simulated instrument conditions.

I. Preflight.

- (a) Equipment examination (oral).
- (b) Preflight inspection.
- (c) Taxiling.
- (d) Powerplant checks.

II. Takeoffs.

- (a) Normal.
- (b) Instrument.*
- (c) Crosswind.
- (d) With simulated powerplant failure (multiengine rating only).
- (e) Rejected.

III. Instrument Procedures.

- (a) Area departure and area arrival.*
- (b) Holding.*
- (c) ILS and other instrument approaches.*
- (d) Circling approaches.
- (e) Missed approaches.*

IV. Inflight Maneuvers.

- (a) Steep turns.*
- (b) Approaches to stalls.*
- (c) Specific flight characteristics.
- (d) Powerplant failures.

V. Landings and Approaches to Landing.

- (a) Normal.
- (b) From ILS.
- (c) Crosswind.
- (d) With simulated powerplant failure (multiengine rating only).
- (e) From circling approach.
- (f) Rejected.
- (g) No flap approach.

(h) Accuracy approaches and spot landings (single powerplant rating only).

VI. Normal and Abnormal Procedures.

VII. Emergency Procedures.

VIII. Judgment.

In performing the maneuvers set forth in this appendix, the applicant must satisfactorily demonstrate his knowledge, skill, and judgment of—

- (1) The airplane, its systems and components;
- (2) Proper control of airspeed, configuration, direction, altitude, and attitude of the airplane, all in accordance with the procedures and limitations contained in the ap-

plicable approved airplane flight manual, check lists, or other approved material appropriate to the airplane type; and

(3) Compliance with approved enroute, instrument approach, missed approach, ATC, or other applicable procedures.

I. Preflight.

(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 Regulation 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—

(1) Subjects requiring a practical knowledge of the airplane, its powerplants, systems, components, operational, and performance factors;

(2) Normal, abnormal, and emergency procedures, and the operations and limitations relating thereto; and

(3) The appropriate provisions of the approved Airplane Flight Manual.

(b) *Preflight inspection*. The preflight inspection must include—

(1) A visual inspection of the exterior and interior of the airplane; and

(2) The use of the prestart checklist, appropriate control system checks, starting procedures, checks of all radio and electronics equipment, and the selection of the proper navigation and communications radio facilities and frequencies prior to flight.

During the preflight inspection the applicant must explain briefly the purpose of each item. If a flight engineer is a required flight crewmember for the airplane involved, the waiver provision of § 61.147(c) applies to the visual inspection.

(c) *Taxiing*. This maneuver includes taxiing, sailing, or docking procedures in compliance with instructions issued by the appropriate traffic control authority or by the person conducting the checks.

(d) *Powerplant checks*. As appropriate to the airplane type.

II. Takeoffs.

For the purpose of this maneuver a takeoff begins when the airplane is taxied into position on the runway to be used for takeoff, and ends when the landing gear and flaps are fully retracted in flight, or when an altitude of 1,500' above the airport elevation is reached, whichever occurs first. There must be the following:

(a) One normal takeoff.

(b) One takeoff with instrument conditions simulated at or before reaching an altitude of 100' above the airport elevation.

(c) One crosswind takeoff, if practicable under the existing meteorological, airport, and traffic conditions.

(d) One takeoff with a simulated failure of the most critical powerplant—

(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;

(2) At a point as close as possible after V_1 when V_1 and V_2 (or V_1 and V_2) are identical; or

(3) At the appropriate speed for non-transport category airplanes.

(e) One rejected takeoff. The proper procedures for the rejected takeoff—

(1) May be performed in an airplane after a normal takeoff has been started at a reasonable speed that has been determined by giving due consideration to runway length, surface conditions, brake heat energy, and

other pertinent factors, but in no event at a speed greater than 50 percent of V_1 speed;

(2) May be performed in an approved simulator with an approved visual system or may be demonstrated in an airplane other than in an actual takeoff, if the applicant has completed within the preceding 6 calendar months an approved training course under FAR Part 121 in the airplane type involved; or

(3) May be waived as provided in § 61.147(c).

III. Instrument Procedures.

(a) *Area departure and area arrival*. During each of these maneuvers the applicant must—

(1) Adhere to actual or simulated ATC clearances (including assigned radials); and

(2) Properly use available navigation facilities. Either area arrival or area departure, but not both, may be waived under § 61.147(c).

(b) *Holding*. This maneuver includes entering, maintaining, and leaving holding patterns. It may be performed under either area departure or area arrival and may be waived under § 61.147(c).

(c) *ILS and other instrument approaches*. There must be the following:

(1) At least one normal ILS approach.

(2) At least one ILS approach with a simulated failure of one powerplant. (The simulated failure should start before initiating the final approach course and must continue to touchdown or to commencement of the missed approach procedure.)

(3) Demonstration of approach and missed approach procedures on each touchdown aid, in addition to ILS, that the applicant is likely to use.

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 contacts the runway or when transition to a missed approach configuration is completed. Instrument conditions need not be simulated below 100 feet above touchdown zone elevation. Each instrument approach procedure other than ILS may be accomplished in a synthetic instrument trainer, if observed by the person conducting the flight check or if the applicant has completed an approved training course under Part 121 of this chapter for the airplane type involved if observed by a person qualified to act as an instructor or check airman under that approved training program.

(d) *Circling approaches*. At least one circling approach must be made under the following conditions:

(1) The portion of the circling approach to the authorized minimum circling approach altitude must be made under simulated instrument conditions using an approved procedure for the airport involved.

(2) The instrument 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 degrees from the final approach course of the simulated instrument 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 degrees.

The circling approach maneuver may be performed in an approved simulator that has circling capability if the Administrator finds that the applicant's competency can be de-

termined as well in the simulator as in the airplane.

(e) *Missed approaches*. At least two missed approaches must be made as follows:

(1) One normal ILS missed approach followed by a normal transition to the missed approach configuration.

(2) One missed approach from a simulated instrument approach with a simulated failure of the most critical powerplant. The pull out must be started in sufficient time to permit transition to the climb configuration followed, in sequence, by an approved missed approach procedure for the approach facility being used.

IV. Inflight Maneuvers.

(a) *Steep turn*. Unless waived, as provided in § 61.147(c), at least one steep turn in each direction must be performed. Each steep turn must involve a bank angle of 45 degrees with a heading change of at least 180 degrees but not more than 360 degrees.

(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:

(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 least one of these approaches must be performed while in a turn with a bank angle between 15 and 30 degrees. Two out of the three approaches required by this paragraph may be waived as provided in § 61.147(c).

(c) *Specific flight characteristics*. Unless waived as provided in § 61.147(c), recovery from specific flight characteristics that are peculiar to the airplane type (i.e., dutch-roll, high rate of descent, etc.) must be demonstrated.

(d) *Powerplant failures*. In addition to the 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.

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.

(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.

(c) Crosswind landing, if practical under existing meteorological, airport, and traffic conditions.

(d) Maneuvering to a landing with simulated failure of 50 percent 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).

(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.

(f) A rejected landing that includes 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. This maneuver may be combined with the ILS missed approach or the circling approach. If performed under simulated instrument conditions, those conditions need not be simulated below a height of 100' above the runway.

(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.

(h) 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 180 degrees change in direction. The airplane must touch the ground in a normal landing attitude beyond and within 200 feet from a designated line. At least one landing must be from a forward slip. One hundred eighty degree approaches using two 90 degree turns with a straight base leg are preferred although circular approaches are acceptable.

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 aircraft type:

- (a) Anti-icing and deicing systems.
- (b) Auto-pilot systems.
- (c) Automatic or other approach aid systems.
- (d) Stall warning devices, stall avoidance devices, and stability augmentation devices.
- (e) Airborne radar devices.
- (f) Any other systems, devices, or aids available.

This maneuver (or any part thereof) may be performed in an approved simulator if the Administrator finds that the applicant's competency with respect to the systems and devices can be determined as well in the simulator as in the airplane.

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 procedures:

- (a) Fire in flight.
- (b) Smoke control.
- (c) Rapid decompression.
- (d) Emergency descent.
- (e) Hydraulic and electrical system failures and malfunctions.
- (f) Landing gear and flap systems failure or malfunction.
- (g) Failure of navigation or communications equipment.
- (h) Any other emergency procedures outlined in the appropriate approved airplane flight manual.

Items (e) and (f) may be performed in an appropriate training device that the Administrator approves for that purpose. This maneuver (or any part thereof) may be performed in an approved simulator if the Administrator finds that the applicant's competency can be determined as well in the simulator as in the airplane.

VIII. Judgment.

Throughout the maneuvers prescribed in this appendix, the applicant must demonstrate judgment commensurate with a high level of safety. In determining whether the applicant has shown such judgment the FAA inspector or designated examiner gives consideration to the applicant's—

- (a) Adherence to approved procedures;
- (b) Action in situations requiring a decision based on the applicant's analysis

where there is no prescribed procedure or recommended practice; and

- (c) Qualities of prudence and care in selecting a course of action.

9. Part 121 is amended by adding a new appendix to be Appendix F to read as follows:

APPENDIX F PROFICIENCY CHECK REQUIREMENTS

The proficiency check required by § 121.441 must include the items set forth in this appendix. Those items indicated by an asterisk (*) must be performed under simulated instrument conditions. Those items indicated by a double asterisk (**) must be performed in flight when an approved simulator is used in the conduct of a proficiency check under § 121.442(c).

I. Preflight.

(a) Equipment examination (oral or written).

(b) Preflight inspection.

(c) Taxing.

(d) Powerplant checks.

II. Takeoffs.

(a) Normal.

(b) Instrument.*

(c) Crosswind.

(d) With simulated powerplant failure.**

(e) Rejected.**

III. Instrument Procedures.

(a) Area departure and area arrival.*

(b) Holding.*

(c) ILS and other instrument approaches.**

(d) Circling approaches.**

(e) Missed approaches.**

IV. Inflight Maneuvers.

(a) Steep turns.*

(b) Approaches to stalls.*

(c) Specific flight characteristics.

(d) Powerplant failures.

V. Landings and Approaches to Landings.

(a) Normal.

(b) From ILS.*

(c) Crosswind.

(d) With simulated powerplant failure.**

(e) From circling approach.

(f) Rejected.**

VI. Normal and Abnormal Procedures.

VII. Emergency Procedures.

VIII. Judgment.

In performing the maneuvers set forth in this appendix, the applicant must satisfactorily demonstrate his knowledge, skill and judgment of—

- (1) The airplane, its systems and components;
- (2) Proper control of airspeed, configuration, direction, altitude and attitude of the airplane, all in accordance with the procedures and limitations contained in the applicable approved airplane flight manual, the certificate holder's operations manual, check lists, or other approved material appropriate to the airplane type; and
- (3) Compliance with approved en route, instrument approach, missed approach, ATC, or other applicable procedures.

I. Preflight.

(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—

(1) Subjects requiring a practical knowledge of the airplane, its powerplants, systems, components, operational, and performance factors;

(2) Normal, abnormal, and emergency procedures, and the operations and limitations relating thereto; and

(3) The appropriate provisions of the approved Airplane Flight Manual.

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.

(b) Preflight inspection. The preflight inspection must include—

(1) A visual inspection of the exterior and interior of the airplane; and

(2) The use of the prestart checklist, appropriate control system checks, starting procedures, checks of all radio and electronic equipment, and the selection of the proper navigation and communications radio facilities and frequencies prior to flight.

During the preflight inspection the applicant must explain briefly the purpose of each item. If a flight engineer is a required flight crewmember for the airplane type involved, the waiver provision of § 121.441(d) applies to the visual inspection.

(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.

(d) Powerplant checks as appropriate to the airplane type.

II. Takeoffs.

For the purpose of this maneuver a takeoff begins when the aircraft is taxied into position on the runway to be used for takeoff, and ends when the landing gear and flaps are fully retracted in flight, or when an altitude of 1,500' above the airport elevations is reached, whichever occurs first. There must be the following:

(a) One normal takeoff.

(b) One takeoff with instrument conditions simulated at or before reaching an altitude of 100' above the airport elevation.

(c) One crosswind takeoff, if practicable under the existing meteorological, airport, and traffic conditions.

(d) One takeoff with a simulated failure of the most critical powerplant—

(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;

(2) At a point as close as possible after V_1 , when V_1 and V_2 (or V_1 and V_2) are identical; or

(3) At the appropriate speed for nontransport category airplanes.

(e) One rejected takeoff. The proper procedures for the rejected takeoff—

(1) May be performed in an airplane after a normal takeoff has been started at a reasonable speed that has been determined by giving due consideration to runway length, surface conditions, brake heat energy, and other pertinent factors, but in no event at a speed greater than 80 percent of V_1 speed;

(2) May be performed in an approved simulator with an approved visual system or may be demonstrated in an airplane other than during an actual takeoff; or

(3) May be waived as provided in § 121.441(d).

III. Instrument Procedures.

(a) Area Departure and Area Arrival. During each of these maneuvers the applicant must—

(1) Adhere to actual or simulated ATC clearances (including assigned radials); and

(2) Properly use available navigation facilities.

Either area arrival or area departure, but not both, may be waived under § 121.441(d).

(b) Holding. This maneuver includes entering, maintaining, and leaving holding patterns. It may be performed in connec-

tion with either area departure or area arrival and may be waived under § 121.441(d).

(c) *ILS and other instrument approaches.* There must be the following:

- (1) At least one normal ILS approach.
- (2) At least one ILS approach with a simulated failure of one powerplant. (The simulated failure should start before initiating the final approach course and must continue to touchdown or to commencement of the missed approach procedure.)
- (3) Demonstration of approach and missed approach procedures on each let-down aid in addition to ILS for which the certificate holder is approved.

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 contacts the runway or when transition to a missed approach configuration is completed. Instrument conditions need not be simulated below 100 feet above touchdown zone elevation. Each instrument approach procedure other than ILS may be accomplished in a synthetic instrument trainer.

(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—

(1) The portion of the approach to the authorized minimum circling approach altitude must be made under simulated instrument conditions using an approved procedure for the airport involved.

(2) The instrument 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 degrees from the final approach course of the simulated instrument 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 degrees.

The circling approach maneuver may be performed in an approved simulator that has circling capability if the Administrator finds that the applicant's competency can be determined as well in the simulator as in the airplane.

(e) *Missed approaches.* At least two missed approaches must be made as follows:

(1) One normal ILS missed approach followed by a normal transition to the missed approach configuration.

(2) One missed approach from a simulated instrument approach immediately following a simulated failure of the most critical powerplant. The pull out must be started in sufficient time to permit transition to the climb configuration followed, in sequence, by an approved missed approach procedure for the approach facility being used.

IV. *Inflight Maneuvers.*

(a) *Steep turn.* Unless waived, as provided in § 121.441(d), at least one steep turn in each direction must be performed. Each steep turn must involve a bank angle of 45 degrees with a heading change of at least 180 degrees but not more than 360 degrees.

(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:

- (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 least one of these approaches must be performed while in turn with a bank angle between 15 and 30 degrees. Two out of the three approaches required by this paragraph may be waived as provided in § 121.441(d). 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.* Unless waived as provided in § 121.441(d), recovery from specific flight characteristics that are peculiar to the airplane type (i.e., dutch-roll, high rate of descent, etc.) must be demonstrated.

(d) *Powerplant failures.* In addition to the 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.

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) 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.

(c) Crosswind landing, if practical under existing meteorological, airport, and traffic conditions.

(d) Maneuvering to a landing with simulated failure of 50 percent 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). 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.

(e) If the certificate holder is approved for circling minimums below 1000-3, 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.

(f) A rejected landing that includes 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. This maneuver may be combined with the ILS missed approach or the circling approach. If performed under simulated instrument conditions, those conditions need not be simulated below a height of 100' above the runway.

Notwithstanding the authorization for combining and waiving of maneuvers, for an initial second in command proficiency check at least two actual landings (one to a full stop) must be made.

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) Antifluiding and deicing systems.
- (b) Auto-pilot systems.
- (c) Automatic or other approach aid systems.
- (d) Stall warning devices, stall avoidance devices, and stability augmentation devices.
- (e) Airborne radar devices.
- (f) Any other systems, devices, or aids available.

This maneuver (or any part thereof) may be performed in an approved simulator if the Administrator finds that the applicant's competency with respect to the systems and devices can be determined as well in the simulator as in the airplane.

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 procedures:

- (a) Fire in flight.
- (b) Smoke control.
- (c) Rapid decompression.
- (d) Emergency descent.
- (e) Hydraulic and electrical system failures and malfunctions.
- (f) Landing gear and flap systems failure or malfunction.
- (g) Failure of navigation or communications equipment.
- (h) Any other emergency procedures outlined in the appropriate approved airplane flight manual.

Items (e) and (f) may be performed in an appropriate training device that the Administrator approves for that purpose. This maneuver (or any part thereof) may be performed in an approved simulator if the Administrator finds that the applicant's competency can be determined as well in the simulator as in the airplane.

VIII. *Judgment.*

Throughout the maneuvers prescribed in this appendix the applicant must demonstrate judgment commensurate with a high level of safety. In determining whether the applicant has shown such judgment the person conducting the check will give consideration to the applicant's—

- (a) Adherence to approved procedures;
- (b) Action in situations requiring a decision based on the applicant's analysis where there is no prescribed procedure or recommended practice; and
- (c) Qualities of prudence and care in selecting a course of action.