

Advance copy pending
issuance of Changes to
FAR Parts 1, 61, 91,
and 135

See correction

Title 14—AERONAUTICS AND SPACE

Chapter I—Federal Aviation Adminis- tration, Department of Transporta- tion

[Docket No. 7025; Amdts. 1-12; 61-32; 91-39;
135-5]

CATEGORY II OPERATION: GENERAL AVIATION AIRPLANES

Miscellaneous Amendments to Chapter

The purpose of these amendments to the Federal Aviation Regulations is to prescribe the requirements for a Category II operation. Compliance with these requirements will allow the conduct of an ILS approach and landing at certain airports with minima as low as a 100-foot decision height and 1,200 feet RVR. These amendments apply to all operations under Part 91, and to operations

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by air taxi and commercial operators under Part 135.

The substance of these rules was fully discussed in FAA Notice No. 65-35 as published in the FEDERAL REGISTER on November 24, 1965 (29 F.R. 14600). As stated in that notice, the use of Category II minimums by general aviation operators, and air taxi and commercial operators, is premised upon the following general requirements to be adopted by the agency within the framework of the Federal Aviation Regulations: (1) Pilot qualifications and proficiency; (2) airplane equipment and maintenance; and (3) airport ground facilities.

Based upon public comments received in response to the notice and upon review within the agency, a number of changes have been made to the proposed rule. Most of these involve rewording and reorganization for greater clarity and consistency, but several changes affect the substance of the rule. The issue of a supplementary notice of proposed rule making to solicit comments upon these changes was considered. However, comments from the public on the original notice and from within the agency indicated that the further delays attendant to this course of action would not be in the best interest of those concerned. Consequently, the FAA is issuing a final rule and is soliciting further public comment on the substantive changes with a view towards possible future amendments. This action will allow those operators who have prepared for Category II operations to proceed with their qualification under these rules without further delay. The agency feels that this course of action is justified and is in the best interest of the public since the proposed rule was a relaxation of present regulations and therefore substantive changes would not impose any greater burden upon those affected than already exists.

Interested persons are invited to submit comments in duplicate addressed to Federal Aviation Administration, Office of the General Counsel, Attention: Rules Docket, 800 Independence Avenue SW., Washington, D.C. 20590.

The most significant change expands the rule to apply to small nonturbojet airplanes. Comments on the notice indicated both the desire and the capability on the part of some operators of these airplanes to conduct Category II operations. Therefore, the rules adopted contain no limitation on the type of airplane that may be approved for Category II operations. They apply to all airplanes, large or small, operated under Part 91, and operated by Air Taxi and Commercial Operators under Part 135 of these regulations.

In addition, a number of these comments expressed the opinion that small aircraft could safely conduct Category II operations under existing IFR requirements, some of them with a single pilot. Studies are being conducted to determine the feasibility of establishing less stringent rules for smaller and slower aircraft. A separate proposal for these aircraft may be initiated at a later date.

Other more significant changes to the notice will: (1) Add certain definitions and symbols to Part 1 for use in the regulations and approach procedures; (2) require recent pilot experience for make and model of equipment; (3) add a list of required ground components; (4) make mandatory the procedures and instructions contained in the Category II manual; (5) add a marker beacon receiver to the equipment list and delete several other items of equipment; (6) remove the corrected barometric altimeters as a means for determining decision heights below 150 feet; (7) limit the evaluation program to the low approach system (flight control guidance system) and impose new criteria for the other equipment; (8) require the demonstrations of the evaluation program to be under simulated instrument conditions; and (9) require certain portions of the maintenance program to be performed by certificated repair stations.

Although the rules adopted are basically the same as those proposed in the notice, the changes mentioned above and other minor changes were made in response to comments from within and without the agency. These changes are explained in detail below.

1. *Definitions.* (a) It has been determined by the agency that the term "Category II Operation" should be defined in Part 1 of the Federal Aviation Regulations. As defined, the term will encompass all approaches under ILS instrument approach procedures designated as Category II by the administrator or other appropriate authority. Other appropriate authority includes the Armed Forces of the United States and foreign governments.

Since the use of a decision height is an integral part of a Category II operation and it is not defined in the regulations, Part 1 has also been amended to include a definition of the term "decision height" similar to that contained in AC-120-20.

(b) The symbols "Cat. II," "DH," and "RVR" are added to § 1.2 for use in Category II instrument approach procedures and other parts of the regulations. "RVR" is measured in the touchdown zone since at some airports this information is available for the rollout zone as well.

2. *Airports.* As stated in the notice, the runway visual range and decision height minimums for each airport at which a Category II operation is authorized will be prescribed by the administrator under Part 97, and shown in the appropriate approach charts for the airport.

The criteria for the ground system and for obstruction clearance that are used by the Administrator for establishing a Category II approach at an airport are shown in AC-120-20.

3. *Pilot qualifications and proficiency.* (a) As the notice would have limited Category II operations to airplanes that require a type rating, there was no necessity for placing that particular limitation on the Category II pilot authorization. However, it was the intention of the agency that no person should act as pilot in command during a Cate-

gory II operation unless he was qualified in that type airplane. Since type ratings are not now required for small nonturbojet airplanes, it is now necessary to limit a Category II authorization to the type airplane in which a pilot has passed a practical test. The necessary limitations are accomplished by changes to §§ 61.3 (g) and 61.38 (redesignated as § 61.37A).

(b) The proposal would have required Category II authorizations for all pilots of foreign aircraft and for Part 91 operations by air carriers and commercial operators. In order to avoid this problem, an authorization for Category II operations that is granted by the country of registry of an aircraft is now acceptable under § 61.3(g) and subparagraph (3) of this section now excludes operations by Part 121 certificate holders.

(c) In response to comments received, the agency has decided to permit, in all airplanes including turbojets, the use of a flight control guidance system consisting either of an automatic approach coupler or a flight director system. In view of this modification of the equipment requirements, the experience requirements of § 61.37A(b)(2) have been changed to provide that at least three of the six ILS approaches must be manual, without the use of an approach coupler.

(d) The recent experience requirements for taking the periodic test are now applicable only to individuals who have not passed a practical test during the past year.

(e) The experience requirements of § 61.37A(b) have also been changed to make it clear that the required ILS approaches need not be conducted down to the minimums prescribed for Category II operations.

(f) Three comments suggested that the proposed rules be revised to allow the use of flight simulators for alternate practical tests after original qualification. Disposition of these comments is being withheld until more information is available as to the retention of proficiency by pilots holding Category II authorizations.

(g) Category II pilot tests, both original and periodic, will be given by an FAA inspector or an examiner designated by the Administrator. Standards for the qualification and designation of examiners are being developed and will be published in the near future.

(h) Since the rules adopted herein permit Category II operations with all airplanes and will also permit the use of either a flight director system or an automatic approach coupler, the instrument flight test procedures and maneuvers of the proposal have been changed to cover all airplanes using either equipment. Those multiengine airplanes lacking engine-out performance capability to make a missed approach are treated as single engine airplanes under these provisions.

(i) The requirement of a class or type rating for the second in command on a flight test has been added to § 61.37A(c)(2) to bring it in conformity with § 91.21.

(j) Due to the considerable variance in operation and presentation of different makes and models of flight control guid-

ance systems it was the intent of the agency, as expressed in the preamble to the notice and in § 61.3(g), to limit pilot authorizations to the particular make and model equipment used in the practical test. However, it has been determined that the purpose of this limitation can be accomplished by less restrictive means. Although a pilot authorization will not be so limited, § 61.47(h) will require the pilot in command to have recent experience with the particular equipment used in a Category II operation in addition to the renewal testing required under § 61.10. The experience may be acquired under actual or simulated instrument flight conditions and may be approaches made on the practical test, during training, or during actual operations.

4. *Operating requirements.* (a) Since the operations specifications of air carriers and commercial operators are only applicable to Part 121 operations, the proposed rules would have been applicable to Part 91 operations for these operators. The language of the exclusion has been expanded to avoid any applicability to Part 121 certificate holders. Section 91.6(d) also provides that Part 91 Category II operations by these operators must be conducted in accordance with Part 121 operations specifications. Although foreign aircraft will be covered by the general operating rules of § 91.6, the requirements concerning equipment, maintenance, and the Category II manual are only applicable to civil aircraft of United States registry.

(b) The format of § 91.6 of the proposal has been changed and only proposed paragraph (a) (3) and (4) remain in that section. A new paragraph (b) establishes the requirement of normal operation by all ground components of a Category II ILS and allows certain substitutions.

The language of § 91.117(h) was not particularly appropriate to Category II operations and the substance thereof has been added to § 91.6 in a new paragraph (c). Since either the pilot's authorization (as provided in § 61.5(e)) or the lack of decision height equipment in the aircraft (under section 2 of Appendix A, to be discussed below) may limit the operation to a 150-foot decision height, these limitations must be considered in addition to the decision height prescribed in the approach procedure.

The rules adopted do not set forth any restriction on the initiation of an approach. This allows general aviation pilots to conduct a Category II operation without regard to the reported weather just as they may do with a normal ILS approach. However, if the airplane is not in a position to land with the pilot having a visual reference to the runway, a missed approach must be executed at the authorized decision height. The additional 50-foot descent allowed by § 91.117(h) when the airplane is clear of clouds is not applicable here because of the very critical altitudes to which descent is allowed in Category II operations.

(c) Most of the provisions regarding the Category II manual have been transferred to the Appendix. Section 91.34(a) (3) will require continuing compliance with the provisions of the maintenance program with respect to those instruments and equipment required for a particular approach. For instance, the operator would be in compliance for an approach to a 150-foot decision height, without a properly maintained radio altimeter or inner marker receiver, but would be in violation of this section if the same approach were continued to a 100-foot decision height.

The operational procedures, instructions, and limitations approved as a part of the Category II manual would serve very little purpose if they are not followed in the actual conduct of a Category II operation. Compliance with these approved procedures, instructions, and limitations is specifically required in § 91.34(a) (2).

(d) Proposed § 91.169(d) is deleted and its substance is incorporated in new § 91.34(a) (3).

5. *Airplane equipment.* (a) A sentence has been added to section 2 of the Appendix to emphasize that there is no necessity of duplicating instruments and equipment already required by § 91.33 and other provisions of the regulations.

(b) Section 2 of the Appendix has been divided into two groups of required instruments and equipment to avoid any misunderstanding as to those instruments and equipment subject to the various requirements of the maintenance program. Group I instruments and equipment must be bench checked both prior to approval and as a part of the maintenance program. In addition, they must be inspected or functionally flight checked once every 3 months. On the other hand, Group II instruments and equipment do not require special maintenance procedures other than those necessary to retain the original approval condition.

(c) A number of items in the equipment list have been reworded for clarity as to exactly what is required. Where applicable, the language has been brought into conformity with that used in § 91.33.

(d) In response to comments received, a sentence has been added to the ILS localizer and glide slope receiver requirements of section 2(a) (1) to provide that a single localizer antenna and glide slope antenna may be used. However, certain ILS installations have a single antenna and power source serving both the ILS receivers and the VHF communications system. With such an installation, use of the VHF communications causes loss of ILS indications, an undesirable situation during a Category II operation. Therefore, section 2(a) (2) requires that the use of the communication system must not affect the ILS system.

(e) A marker beacon receiver for the outer and middle marker is required by § 91.117(d) for ILS approaches, but this does not provide for distinctive indications. Since all airports with Category II approaches will be required to have an inner marker that is necessarily very

close to the middle marker, the pilot must have a positive means of distinguishing between the two. This is provided for by sections 2(a) (3) and (10) of Appendix A.

(f) It has been determined that the free air temperature gauge and the dual systems for communications, power, and static pressure are not necessary.

(g) The flight control guidance system requirements have been amended to apply to all airplanes and now permit the use of either an automatic approach coupler or a flight director system.

(h) It has been decided that a special decision height system is not necessary for Category II operations with decision heights of 150 feet or greater. Operations to this height can be safely conducted using the barometric altimeters if there is available to the pilot a placarded correction for the instrument scale error and for the wheel height of the airplane. Scale error is determined by an altimeter test and inspection under Appendix E to Part 43. The wheel height correction is necessary only if the wheel-to-instrument height is in excess of the 10 feet presently allowed for in U.S. Weather Bureau altimeter settings provided for aircraft. For instance, a Boeing 707 aircraft has a 19-foot wheel-to-instrument height and would require a 9-foot correction under this rule.

The notice would have allowed either a radio altimeter or specially corrected barometric altimeters as a means for determining decision height at airports without an inner marker. These alternatives were derived from the requirements for air carriers who have been conducting Category II operations without inner markers. However, since publication of the notice, plans have been completed for inner marker installations at all airports that will be authorized for Category II operations. Consequently, the necessity for alternative decision height equipment is substantially diminished. The major purpose that the alternatives now serve will be to permit the conduct of a Category II operation when a ground or airborne component of the inner marker system is inoperative. In addition, considerable difficulty has been encountered in establishing a test program that will adequately correct barometric altimeters for use at a 100-foot decision height. This has prevented the agency from developing standards by which the accuracy of the altimeters can be measured. In view of these factors, which make the use of this alternative unlikely, the agency has decided to delete the barometric altimeters as a system for identifying decision heights below 150 feet.

This is not intended to preclude the use of the barometric altimeters at the lower decision heights if the satisfactory test program can be developed and they can be corrected so as to allow safe operation at a height of 100 feet. At such time the agency will consider a change to the equipment list to allow their use as a decision height identification system.

(i) The missed approach attitude guidance is deleted as unnecessary. The

attitude gyrosystems will invariably provide this guidance without imposition of an additional requirement.

(j) The essential instruments and equipment that require failure warning systems have been specifically listed in section 2(b)(1) of the Appendix.

(k) Although the whole tenor of the notice was that only dual piloted airplanes would be approved for Category II operations, dual controls were not provided for specifically. This deficiency is remedied in section 2(b)(2).

6. *Approval of equipment.* (a) The notice provided for approval of all instruments and equipment by either type or supplemental type certification or by an equipment evaluation program. However, the demonstrations of the evaluation program were designed only to test the flight control guidance system (low approach system). Consequently, the section of the Appendix has been reorganized to provide more realistic criteria for approval of the other instruments and equipment.

(b) The first two paragraphs of proposed section 2 have been combined into section 3(a). The reference to method of approval contained is dropped and new paragraphs (b), (c), and (d) now contain the criteria for approval of instruments and equipment.

(c) New section 3(b) now provides the three alternative methods of approval only for the flight control guidance system. In addition, it specifically requires approval of changes to make, model, or design. However, approval of these changes will not necessarily involve the same burden as the initial approval. Since the evaluation program demonstrations can be waived by the Administrator, it is possible for minor changes to be approved without any demonstration flights. Optional equipment, although not required by section 2 of the Appendix, must also be approved if it is to be used in Category II operations.

(d) The radio altimeter, if it is to be used as decision height equipment, is a critical system requiring stringent approval criteria. The evaluation program was deficient in this regard and separate performance criteria for approval have been established in new section 3(c).

(e) The balance of the required instruments and equipment are approved under new section 3(d) which is self-explanatory. It should be noted that only those changes that constitute alterations need be approved once the basic system has been approved.

(f) The evaluation program has been moved from section 2(c) to section 3(e). Application is made as a part of the application for approval of the Category II manual. Approval of the contents of the manual, including the maintenance program, will proceed concurrently with the instrument and equipment approval. Upon successful completion of the evaluation program, approval of the other instruments and equipment, and approval of the contents of the manual, the manual itself will be approved for that airplane. Thereafter, the airplane may be used in Category II operations, subject to the other operating rules.

(g) The requirements of the demonstrations have been reworded with two minor changes. Glide slope deviation allowable on a successful approach has been redefined in terms of indicator deflection and the demonstrations must be conducted under simulated instrument conditions in order to adequately evaluate the operation of the system. This does not preclude demonstrations under actual conditions to normal ILS minimums and then under simulated condition to 100 feet. However, since the airplane is not approved for Category II operations, it cannot be used in an approach under actual instrument conditions to 100 feet.

(h) No time limit for keeping evaluation program records was set in the notice. The final rule now requires this only for the duration of the program.

(i) A new subparagraph (4) has been added to the evaluation program since it was possible for a flight control guidance system to meet the criteria for successful approaches and still have dangerous design deficiencies. The criteria for successful approaches are not intended to be the sole standard for approval.

7. *Maintenance.* (a) A number of comments expressed concern over the large volume of material the operator would have to place in the maintenance portion of his Category II manual. In response to these comments, the agency is preparing an Advisory Circular that will contain guidelines from which an acceptable and moderate sized maintenance program for Category II instruments and equipment can be developed by the operators involved.

(b) The portions of the proposed section 3(a) relating to program approval are deleted since the maintenance program is an integral part of the Category II manual and will be approved as part of that document.

(c) In view of the misunderstanding of the term "overhaul," used in the maintenance program of the Appendix, it appears desirable to substitute the term "bench check" for the term "overhaul." The term "overhaul" denotes a complete tear down and reassembly. A "bench check," however, usually denotes a removal of the item from the airplane; a visual inspection for cleanliness, impending failure, need for lubrication, and need for repair or replacement of parts; the correction of any deficiencies found; and calibrations to the proper specifications. Since the latter meaning is intended, all references in the maintenance program have been appropriately amended. In addition, a definition of a "bench check" has been included in section 4(b) of the Appendix. One comment noted that any appropriately rated FAA approved repair station should be able to perform maintenance on required Category II equipment. Therefore, it would be unnecessary to list in the maintenance program each maintenance facility to be used by the operator. The agency agrees and has deleted this requirement from the contents of the maintenance program. However, bench checks (overhaul) are now required to

be performed by certificated repair stations.

(d) The notice would have required evidence of bench check (overhaul) of equipment within 6 months before application for approval of the maintenance program. The 6-month period is changed to 12 months, and the section is rearranged and placed in section 4 so it is more clearly a requirement for approval rather than a part of the maintenance program. Specific criteria for these prior checks are also placed in new section 3(a). The references to Advisory Circular 20-31 in the proposal are replaced by an RTCA Paper since this is the only portion of the advisory circular that must be followed. A statement of cost and availability of the RTCA paper is also included.

(e) The list of instruments and equipment in the contents of the maintenance program is reduced to those specified in section 2 of the Appendix instead of all those required by § 91.33(f). It is also limited to those items that are approved for Category II operations and therefore subject to the maintenance program.

(f) The provisions of sections 3(a)(3), 3(a)(6), 3(b), and 3(c) have been reorganized and now comprise subparagraphs 4(a)(2) through (5) in the contents of the maintenance program.

(g) Section 3(a)(5) is deleted and its purpose is achieved by § 91.34(a)(3).

(h) The inspection schedule calls for inspections every three months as opposed to four inspections every 12 months proposed in the notice. The operational flight check is now called a functional flight check and the pilot's authorization must include the type airplane in which the equipment to be checked is installed.

(i) A new section 4(a)(6) will assure that the pilot is aware of any defects in instruments and equipment listed in the maintenance program. The knowledge will enable him to decide whether or not the airplane can be used in a Category II operation. If it can be so used, he will also know if it is limited to a 150-foot decision height because of a defect in the decision height system.

(j) Section 4(a)(7) assures that the listed instruments and equipment upon which maintenance is performed are returned to their originally approved condition. The ability to legally conduct a Category II operation depends on a compliance with the maintenance program and this procedure will be a part of that program. Therefore, if a piece of equipment is required for a particular Category II operation, but has not been maintained in its approved condition, the maintenance program has not been complied with and the airplane cannot be used for that Category II operation.

(k) Since § 43.9 requires maintenance records to be maintained in accordance with that section, the first sentence of proposed section 3(d) which referred to the recordkeeping requirements of § 43.9 is unnecessary and has been deleted from the rules as adopted. The requirement for data respecting a discontinued Category II approach has been retained in section 4(a)(8).

(k) A number of comments objected to the periodic maintenance requirements proposed for Category II navigation and communication equipment, particularly the requirement for an annual bench check. The FAA believes that the proposed periodic maintenance requirements are realistic and necessary, especially during the initial period of authorization to engage in Category II operations. However, the rule has been revised to allow extension of periodic maintenance intervals after the completion of at least one 12-month maintenance cycle, if the operator can show that longer intervals are justified on the basis of his operating experience.

8. *Part 135—Air taxi and commercial operators.* (a) In response to requests received from Part 135 operators, the agency has concluded that Category II operations should also be authorized for qualified operators of airplanes under Part 135. Since the rules of Part 91 apply to operations under Part 135, the amendments to Part 91 will apply to operations under Part 135. Each holder of an ATCO certificate will be required by § 135.9(a) to obtain an appropriate authorization in his operations specifications before conducting Category II operations under Part 135. This authorization will be given upon a showing by the operator that he meets the requirements of Parts 61 and 91 for a Category II operation. Those operators presently authorized to conduct Category II operations should continue to follow their present operations specifications until they are amended to provide for the conduct of those operations under Part 91.

(b) In order to make clear that two pilots are required for Category II operations and that such operations are not subject to the exceptions for limited IFR conditions and for the use of an autopilot system, a new § 135.72 has been added.

Upon consideration of the comments received in response to Notice 65-35, Parts 1, 61, 91, and 135 of the Federal Aviation Regulations are amended as follows, effective August 7, 1967.

PART 1—DEFINITIONS AND ABBREVIATIONS

1. By amending Part 1 as follows:

§ 1.1 [Amended]

a. By adding the following definitions to § 1.1 in their proper alphabetical order:

“Category II operations,” with respect to the operation of aircraft, means a straight-in ILS approach to the runway of an airport under a Category II ILS instrument approach procedure issued by the Administrator or other appropriate authority.

“Decision height,” with respect to the operation of aircraft, means the height at which a decision must be made, during an ILS or PAR instrument approach, to either continue the approach or to execute a missed approach.

§ 1.2 [Amended]

b. By adding the following abbreviations to § 1.2 in their proper alphabetical order:

“CAT II” means Category II.

“DH” means decision height.

“RVR” means runway visual range as measured in the touchdown zone area.

PART 61—CERTIFICATION: PILOTS AND FLIGHT INSTRUCTORS

2. By amending Part 61 as follows:

a. By adding the following new paragraph at the end of § 61.3:

§ 61.3 Certificates and ratings required.

(g) *Category II pilot authorization.*

(1) No person may act as pilot in command of a civil aircraft in a Category II operation unless he holds a current Category II pilot authorization for that type aircraft or, in the case of a civil aircraft of foreign registry, he is authorized by the country of registry to act as pilot in command of that aircraft in Category II operations.

(2) No person may act as second in command of a civil aircraft in a Category II operation unless he holds a current instrument rating or an airline transport pilot certificate or, in the case of a civil aircraft of foreign registry, he is authorized by the country of registry to act as second in command of that aircraft in Category II operations.

(3) This paragraph does not apply to operations conducted by the holder of a certificate issued under Part 121 of this chapter.

b. By redesignating § 61.5 (e) and (f) as (f) and (g), respectively, and inserting the following after § 61.5(d).

§ 61.5 Application and issue.

(e) A Category II pilot authorization is issued as a part of the applicant's instrument rating or airline transport pilot certificate. Upon original issue the authorization contains a limitation for Category II operations of 1,600 feet RVR and a 150-foot decision height. This limitation is removed when the holder shows that since the beginning of the sixth preceding calendar month he has made three Category II ILS approaches to a landing under actual or simulated instrument conditions with a 150-foot decision height.

c. By adding the following new section after § 61.9:

§ 61.10 Duration of Category II pilot authorization.

A Category II pilot authorization expires at the end of the sixth calendar month after it was issued or renewed. Upon passing a practical test it is renewed for each type airplane for which an authorization is held. However, an authorization for a particular type airplane will not be renewed to extend beyond the end of the 12th calendar month

after the practical test was passed in that type airplane. If the holder of the authorization passes the practical test for a renewal in the calendar month before the authorization expires, he is considered to have passed it during the calendar month the authorization expired.

d. By adding the following new section after § 61.35:

§ 61.36 Category II pilot authorization: experience requirements.

(a) An applicant for a Category II pilot authorization must hold—

(1) A pilot certificate with an instrument rating or an airline transport pilot certificate; and

(2) A type rating for the airplane type if the authorization is requested for a large airplane or a small turbojet airplane.

(b) Except for the holder of an airline transport pilot certificate, an applicant for a Category II authorization must have at least—

(1) 50 hours of night flight time under VFR conditions as pilot in command;

(2) 75 hours of instrument time under actual or simulated conditions, that may include 25 hours in a synthetic trainer; and

(3) 250 hours of cross-country flight time as pilot in command.

Night flight and instrument flight time used to meet the requirements of subparagraphs (1) and (2) of this paragraph may also be used to meet the requirements of subparagraph (3) of this paragraph.

e. By adding the following new section after § 61.37:

§ 61.37A Category II pilot authorization: practical test.

(a) *Test required.* The practical test must be passed by—

(1) An applicant for issue or renewal of an authorization.

(2) An applicant for the addition of another type airplane to his authorization.

(b) *Eligibility.* To be eligible for the practical test an applicant under paragraph (a) of this section must meet the requirements of § 61.36 and, if he has not passed a practical test since the beginning of the 12th calendar month before the test, must meet the following recent experience requirements:

(1) The requirements of § 61.47 (d) or (e) appropriate to the pilot certificate held by the applicant.

(2) At least six ILS approaches since the beginning of the sixth calendar month before the test. These approaches must be under actual or simulated instrument flight conditions down to the minimum landing altitude for the ILS approach in the type airplane in which the flight test is to be conducted. However, the approaches need not be conducted down to the decision heights authorized for Category II operations. At least three of these approaches must have been conducted manually, without the use of an approach coupler.

The flight time acquired in meeting the requirements of subparagraph (2) of this paragraph may be used to meet the requirements of subparagraph (1) of this paragraph.

(c) *Practical test.* The practical test consists of two phases:

(1) *Phase I—oral operational test.* The applicant must demonstrate his knowledge of the following:

(i) Required landing distance.
(ii) Recognition of the decision height.
(iii) Missed approach procedures and techniques utilizing computed or fixed attitude guidance displays.

(iv) RVR, its use and limitations.
(v) Use of visual clues, their availability or limitations, and altitude at which they are normally discernible at reduced RVR readings.

(vi) Procedures and techniques related to transition from nonvisual to visual flight during a final approach under reduced RVR.

(vii) Effects of vertical and horizontal wind shear.

(viii) Characteristics and limitations of the ILS and runway lighting systems.

(ix) Characteristics and limitations of the flight director system, auto approach coupler (including split axis type if equipped), auto throttle system (if equipped), and other required Category II equipment.

(x) Assigned duties of the second in command during Category II approaches.

(xi) Instrument and equipment failure warning systems.

(2) *Phase II—Flight test.* The flight test must be taken in an airplane that meets the requirements of Part 91 of this chapter for Category II operations. The test consists of at least two ILS approaches to 100 feet including at least one landing and one missed approach. All approaches must be made with the approved flight control guidance system except that, if an approved automatic approach coupler is installed, at least one approach must be made manually. In the case of a multiengine airplane that has performance capability to execute a missed approach with an engine-out, the missed approach must be executed with one engine set in idle or zero thrust position before reaching the middle marker. The required flight maneuvers must be performed solely by reference to instruments and in coordination with a second in command who holds a class rating and, in the case of a large airplane or a small turbojet airplane, a type rating for that airplane.

f. By adding the following new paragraph at the end of § 61.47:

§ 61.47 Recent flight experience.

(h) *Instrument: Category II operation.* No person may act as pilot in command of a civil aircraft during a Category II operation unless, since the beginning of the sixth preceding calendar month, he has made at least three ILS approaches with the make and basic model flight control guidance system used in that operation. The approaches must have been made under actual or simulated instrument flight conditions

to the minimum landing altitude for the ILS approach. However, the approaches need not be conducted down to the decision heights authorized for Category II operations.

PART 91—GENERAL OPERATIONS AND FLIGHT RULES

3. By amending Part 91 as follows:

a. By adding the following new section after § 91.5:

§ 91.6 Category II operation: general operating rules.

(a) No person may operate a civil aircraft in a Category II operation unless—

(1) The pilot flight crew of the aircraft consists of a pilot in command and a second in command who hold the appropriate authorizations and ratings prescribed in § 61.3 of this chapter; and

(2) Each flight crewmember has adequate knowledge of and familiarity with, the aircraft and the procedures to be used by him.

(b) Unless otherwise authorized by the Administrator, no person may operate a civil aircraft in a Category II operation unless each ground component required for that operation and the related airborne equipment is installed and operating. The ground components are localizer, glide slope, outer marker, middle marker, inner marker, approach lights, high intensity runway lights, touchdown zone lights, centerline lighting and marking, and a runway visual range system for the touchdown zone. In addition, when the runway visual range for the touchdown zone is reported as less than 1,600 feet, a rollout zone runway visual range system must be installed and operating. A compass locator or precision radar may be substituted for fixing the outer or middle marker. The inner marker is not required if the decision height to be used is 150 feet or greater or if the airplane has an approved radio altimeter as provided in Appendix A to this part.

(c) No person may operate an aircraft in a Category II operation below the authorized decision height unless—

(1) The aircraft is in a position from which a normal approach to the runway of intended landing can be made; and

(2) The approach threshold of that runway, or the approach lights or other markings identifiable with the approach end of that runway are clearly visible to the pilot.

If upon arrival at the authorized decision height, or at any time thereafter, any of the above requirements are not met, the pilot shall immediately execute the appropriate missed approach procedure. For the purposes of this paragraph, the authorized decision height is the decision height prescribed for the approach, authorized for the pilot in command, or for which the aircraft is equipped, whichever is higher.

(d) Paragraphs (a), (b), and (c) of this section do not apply to operations conducted by the holder of a certificate issued under Part 121 of this chapter. No person may operate a civil aircraft in a Category II operation conducted by

the holder of a certificate issued under Part 121 of this chapter unless the operation is conducted in accordance with that certificate holder's operations specifications.

b. By striking out the references "(b)-(e)" in § 91.33(a) and inserting the references "(b) through (f)" in place thereof and by adding a new paragraph (f) to § 91.33 as follows:

§ 91.33 Powered civil aircraft with standard category U.S. airworthiness certificates; instrument and equipment requirements.

(f) *Category II operations.* For Category II operations the instruments and equipment specified in paragraph (d) of this section and Appendix A to this part are required. This paragraph does not apply to operations conducted by the holder of a certificate issued under Part 121 of this chapter.

c. By adding the following new section after § 91.33:

§ 91.34 Category II manual.

(a) No person may operate a civil aircraft of U.S. registry in a Category II operation unless—

(1) There is available in the aircraft a current approved Category II manual for that aircraft;

(2) The operation is conducted in accordance with the procedures, instructions, and limitations in that manual; and

(3) The instruments and equipment listed in the manual that are required for a particular Category II operation have been inspected and maintained in accordance with the maintenance program contained in that manual.

(b) Each operator shall keep a current copy of the approved manual at its principal base of operations and shall make it available for inspection upon request of the Administrator.

(c) This paragraph does not apply to operations conducted by the holder of a certificate issued under Part 121 of this chapter.

d. By adding a new Appendix A to read:

APPENDIX A

CATEGORY II OPERATIONS: MANUAL, INSTRUMENTS, EQUIPMENT AND MAINTENANCE

1. *Category II Manual—(a) Application for approval.* An applicant for approval of a Category II manual or an amendment to an approved Category II manual must submit the proposed manual or amendment to the General Aviation District Office having jurisdiction of the area in which the applicant is located. If the application requests an evaluation program, it must include the following:

(1) The location of the airplane and the place where the demonstrations are to be conducted; and

(2) The date the demonstrations are to commence (at least 10 days after filing the application).

(b) *Contents.* Each Category II manual must contain—

(1) the registration number, make, and model of the airplane to which it applies;

(2) A maintenance program as specified in section 4 of this Appendix; and

(3) The procedures and instructions related to recognition of decision height, use of runway visual range information, approach monitoring, the decision region (the region between the middle marker and the decision height), the maximum permissible deviations of the basic ILS indicator within the decision region, a missed approach, use of airborne low approach equipment, minimum altitude for the use of the autopilot, instrument and equipment failure warning systems, instrument failure, and other procedures, instructions, and limitations that may be found necessary by the Administrator.

2. *Required instruments and equipment.* The instruments and equipment listed in this section must be installed in each airplane operated in a Category II operation. This section does not require duplication of instruments and equipment required by § 91.33 or any other provisions of this chapter.

(a) *Group I.* (1) Two localizer and glide slope receiving systems. However, a single localizer antenna and a single glide slope antenna may be used.

(2) A communications system that does not affect the operation of at least one of the ILS systems.

(3) A marker beacon receiver that provides distinctive aural and visual indications of the outer and the middle marker.

(4) Two gyroscopic pitch and bank indicating systems.

(5) Two gyroscopic direction indicating systems.

(6) Two airspeed indicators.

(7) Two sensitive altimeters adjustable for barometric pressure, each having a placarded correction for altimeter scale error and for the wheel height of the airplane.

(8) Two vertical speed indicators.

(9) A flight control guidance system that consists of either an automatic approach coupler or a flight director system with dual displays, or both. A single axis flight director system giving computed roll information is acceptable if basic glide slope information is displayed on each of the dual displays.

(10) For Category II operations with decision heights below 150 feet, either a marker beacon receiver providing aural and visual indications of the inner marker or a radio altimeter.

(b) *Group II.* (1) Warning systems for immediate detection by the pilot of system faults in items (1), (4), (5), and (9) of Group I and, if installed, for use in Category II operations, the radio altimeter and auto throttle system.

(2) Dual controls.

(3) An externally vented static pressure system with an alternate static pressure source.

(4) A windshield wiper or equivalent means of providing adequate cockpit visibility for a safe visual transition by either pilot to touch down and roll out.

(5) A heat source for each airspeed system pitot tube installed or an equivalent means of preventing malfunctioning due to icing of the pitot system.

3. *Instruments and equipment approval—*

(a) *General.* The instruments and equipment required by section 2 of this Appendix must be approved as provided in this section before being used in Category II operations. Before presenting an airplane for approval of the instruments and equipment, it must be shown that, since the beginning of the 12th calendar month before the date of submission—

(1) The ILS localizer and glide slope equipment were bench checked according to the manufacturer's instructions and found to meet those standards specified in RTCA Paper 23-63/DO-117, dated March 14, 1963, "Standard Adjustment Criteria for Airborne Localizer and Glide Slope Receivers," which

may be obtained from the RTCA Secretariat, 2000 K Street NW., Washington, D.C. 20006, at cost of 50 cents per copy, payment in cash or by check or money order payable to the Radio Technical Commission for Aeronautics;

(2) The altimeters and the static pressure systems were tested and inspected in accordance with Appendix E to Part 43 of this chapter; and

(3) All other instruments and items of equipment specified in section 2(a) of this Appendix that are listed in the proposed maintenance program were bench checked and found to meet the manufacturer's specifications.

(b) *Flight control guidance system.* All components of the flight control guidance system must be approved as installed by the evaluation program specified in paragraph (e) of this section if they have not been approved for Category II operations under applicable type or supplemental type certification procedures. In addition, subsequent changes to make, model or design of these components must be approved under this paragraph. Related systems or devices such as the auto throttle and computed missed approach guidance system must be approved in the same manner if they are to be used for Category II operations.

(c) *Radio altimeter.* A radio altimeter must meet the performance criteria of this paragraph for original approval and after each subsequent alteration.

(1) It must display to the flight crew clearly and positively the wheel height of the main landing gear above the terrain.

(2) It must display wheel height above the terrain to an accuracy of plus or minus 5 feet or 5 percent, whichever is greater, under the following conditions:

(i) Pitch angles of zero to plus or minus 5 degrees about the mean approach attitude.

(ii) Roll angles of zero to 20 degrees in either direction.

(iii) Forward velocities from minimum approach speed up to 200 knots.

(iv) Sink rates from zero to 15 feet per second at altitudes from 100 to 200 feet.

(3) Over level ground, it must track the actual altitude of the airplane without significant lag or oscillation.

(4) With the airplane at an altitude of 200 feet or less, any abrupt change in terrain representing no more than 10 percent of the airplane's altitude must not cause the altimeter to unlock, and indicator response to such changes must not exceed 0.1 second, and in addition, if the system unlocks for greater changes, it must require the signal in less than 1 second.

(5) Systems that contain a push-to-test feature must test the entire system (with or without an antenna) at a simulated altitude of less than 500 feet.

(6) The system must provide to the flight crew a positive failure warning display any time there is a loss of power or an absence of ground return signals within the designed range of operating altitudes.

(d) *Other instruments and equipment.* All other instruments and items of equipment required by section 2 of this Appendix must be capable of performing as necessary for Category II operations. Approval is also required after each subsequent alteration to these instruments and items of equipment.

(e) *Evaluation program—*(1) *Application.* Approval by evaluation is requested as a part of the application for approval of the Category II manual.

(2) *Demonstrations.* Unless otherwise authorized by the Administrator, the evaluation program for each airplane requires the demonstrations specified in this subparagraph. At least 50 ILS approaches must be flown with at least five approaches on each of three different ILS facilities and no more

than one-half of the total approaches on any one ILS facility. All approaches shall be flown under simulated instrument conditions to a 100-foot decision height and 90 percent of the total approaches made must be successful. A successful approach is one in which—

(i) At the 100-foot decision height, the indicated airspeed and heading are satisfactory for a normal flare and landing (speed must be plus or minus 5 knots of programmed airspeed but may not be less than computed threshold speed, if auto throttles are used);

(ii) The airplane, at the 100-foot decision height, is positioned so that the cockpit is within, and tracking so as to remain within, the lateral confines of the runway extended;

(iii) Deviation from glide slope after leaving the outer marker does not exceed 50 percent of full scale deflection as displayed on the ILS indicator;

(iv) No unusual roughness or excessive attitude changes occur after leaving the middle marker; and

(v) In the case of an airplane equipped with an approach coupler, the airplane is sufficiently in trim when the approach coupler is disconnected at the decision height to allow for the continuation of a normal approach and landing.

(3) *Records.* During the evaluation program the following information must be maintained by the applicant for the airplane with respect to each approach and made available to the Administrator upon request:

(i) Each deficiency in airborne instruments and equipment that prevented the initiation of an approach.

(ii) The reasons for discontinuing an approach including the altitude above the runway at which it was discontinued.

(iii) Speed control at the 100-foot decision height if auto throttles are used.

(iv) Trim condition of the airplane upon disconnecting the auto coupler with respect to continuation to flare and landing.

(v) Position of the airplane at the middle marker and at the decision height indicated both on a diagram of the basic ILS display and a diagram of the runway extended to the middle marker. Estimated touch down point must be indicated on the runway diagram.

(vi) Compatibility of flight director with the auto coupler, if applicable.

(vii) Quality of overall system performance.

(4) *Evaluation.* A final evaluation of the flight control guidance system is made upon successful completion of the demonstrations. If no hazardous tendencies have been displayed or are otherwise known to exist, the system is approved as installed.

4. *Maintenance program.* (a) Each maintenance program must contain the following:

(1) A list of each instrument and item of equipment specified in section 2 of this Appendix that is installed in the airplane and approved for Category II operations, including the make and model of those specified in section 2(a).

(2) A schedule that provides for the performance of inspections under subparagraph (5) of this paragraph within 3 calendar months after the date of the previous inspection. The inspection must be performed by a person authorized by Part 43 of this chapter, except that each alternate inspection may be replaced by a functional flight check. This functional flight check must be performed by a pilot holding a Category II pilot authorization for the type airplane checked.

(3) A schedule that provides for the performance of bench checks for each listed instrument and item of equipment that is specified in section 2(a) within 12 calendar months after the date of the previous bench check.

(4) A schedule that provides for the performance of a test and inspection of each static pressure system in accordance with Appendix E to Part 43 of this chapter within 12 calendar months after the date of the previous test and inspection.

(5) The procedures for the performance of the periodic inspections and functional flight checks to determine the ability of each listed instrument and item of equipment specified in section 2(a) of this Appendix to perform as approved for Category II operations including a procedure for recording functional flight checks.

(6) A procedure for assuring that the pilot is informed of all defects in listed instruments and items of equipment.

(7) A procedure for assuring that the condition of each listed instrument and item of equipment upon which maintenance is performed is at least equal to its Category II approval condition before it is returned to service for Category II operations.

(8) A procedure for an entry in the maintenance records required by § 43.9 of this chapter that shows the date, airport, and reasons for each discontinued Category II operation because of a malfunction of a listed instrument or item of equipment.

(b) *Bench check.* A bench check required

by this section must comply with this paragraph.

(1) It must be performed by a certificated repair station holding one of the following ratings as appropriate to the equipment checked:

(i) An instrument rating.

(ii) A radio rating.

(iii) A rating issued under Subpart D of Part 145.

(2) It must consist of removal of an instrument or item of equipment and performance of the following:

(i) A visual inspection for cleanliness, impending failure, and the need for lubrication, repair, or replacement of parts;

(ii) Correction of items found by that visual inspection; and

(iii) Calibration to at least the manufacturer's specifications unless otherwise specified in the approved Category II manual for the airplane in which the instrument or item of equipment is installed.

(c) *Extensions.* After the completion of one maintenance cycle of 12 calendar months a request to extend the period for checks, tests, and inspections is approved if it is shown that the performance of particular equipment justifies the requested extension.

PART 135—AIR TAXI OPERATORS AND COMMERCIAL OPERATORS OF SMALL AIRCRAFT

4. By adding the following new section after § 135.71:

§ 135.72 Second in command required in Category II operations.

No person may operate an aircraft in a Category II operation unless there is a second in command of the aircraft.

(Secs. 313(a), 601, 602, 603, Federal Aviation Act of 1958; 49 U.S.C. 1354, 1421-1423)

NOTE: The recordkeeping and reporting requirements contained herein have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942.

Issued in Washington, D.C., on April 25, 1967.

WILLIAM F. McKEE,
Administrator.

[Docket No. 7025; Amdts. 1-12; 61-32; 91-39;
135-5]

**PART 91—GENERAL OPERATIONS
AND FLIGHT RULES**

**Appendix A—Category II Operations:
Manual, Instruments, Equipment and Maintenance**

Correction

In F.R. Doc. 67-5033 appearing at page 6901 of the issue for Friday, May 5, 1967, the word "require" in the eighth line of item 3.(c) (4) of Appendix A is corrected to read "reacquire".