Civil Aeronautics Manual 21

Airline Transport Pilot Rating

October 15, 1956

Introductory Note

Civil Aeronautics Manual 21 contains in a consolidated form (1) Civil Air Regulations Part 21, Airline Transport Pilot Rating, adopted by the Civil Aeronautics Board effective October 20, 1956; and (2) the rules, policies, and interpretations issued by the Administrator of Civil Aeronautics in application to the various sections of the regulations.

CAA *rules* are supplementary regulations issued pursuant to authority expressly conferred on the Administrator in the Civil Air Regulations. Such rules are mandatory and must be complied with.

CAA *policies* provide detailed technical information on recommended methods of complying with the Civil Air Regulations. Such policies are for the guidance of the public and are not mandatory in nature.

CAA *interpretations* define or explain words and phrases of the Civil Air Regulations. Such interpretations are for the guidance of the public and will be followed by the Administration in determining compliance with the regulations.

This manual is arranged to give the number, title, and text of each section of the regulations followed by any rules, policies, or interpretations applicable to that section of the regulations. These rules, policies, or interpretations of the Administrator are identified by consecutive dash numbers appended to the regulation section number.

This manual shall become effective October 15, 1956, unless otherwise indicated. It will be revised from time to time in accordance with the changes in the Civil Air Regulations Part 21, or as the need for additional explanations are brought to the attention of the Administrator.

Contents

Pilot Regulations

Airline Transport Pilot Rating

21.1 *Provision for issuance.* Pursuant to the provisions of the Civil Aeronautics Act of 1938, as amended, empowering the Administrator of Civil Aeronautics to issue airman certificates specifying the capacity in which the holders thereof are authorized to serve as airmen in connection with aircraft, and requiring the Civil Aeronautics Board to prescribe such reasonable rules and regulations governing practices, methods, and procedures as the Board may find necessary to provide adequately for safety in air commerce, airline transport pilots will be rated as to competence in accordance with the provisions of the regulations in this part.

21.5 *Definitions.* As used in this part, terms are defined as follows:

Category. A category is a broad classification of aircraft with distinct configuration and operating characteristics such as airplane, rotorcraft, or glider.

Class. A class is a classification of aircraft within a category differentiating between single-engine and multiengine and land and water configurations.

Flight time. Flight time is the total time from the moment the aircraft first moves under its own power for the purpose of flight until the moment it comes to rest at the end of the flight (block to block).

Maximum certificated takeoff weight. Maximum certificated takeoff weight is the maximum takeoff weight authorized by the terms of the aircraft airworthiness certificate.

Night. Night is the time between the ending of evening civil twilight and the beginning of morning civil twilight as published in the American Air Almanac converted to local time for the locality concerned.

NOTE: The American Air Almanac containing the ending of evening twilight and the beginning of morning twilight tables may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Information is also available concerning such tables in the offices of the Civil Aeronautics Administration or the United States Weather bureau.

Pilot-in-command. A pilot-in-command is the pilot responsible for the operation and safety of the aircraft during the time defined as flight time.

Solo flight time. Solo flight time is flight time during which the pilot is the sole occupant of the aircraft.

Type. Type is a specific classification of aircraft having the same basic design including all modifications thereto except those modifications which result in a change in handling or flight characteristics.

Minimum Requirements

21.9 *Eligibility.* To be eligible for an airline transport pilot competency rating, an applicant shall comply with the minimum requirements set forth in sections 21.10–21.18.

21.10 *Age.* Applicant shall be at least 23 years of age.

21.11 *Character.* Applicant shall be of good moral character.

21.12 *Citizenship.* An applicant for a pilot certificate with an airline transport pilot rating may be a citizen of any country or a person without nationality.

21.13 *Education.*

(a) Applicant shall be able to read, write, and understand the English language, and shall be able to speak the English language without accent or impediment of speech which would interfere with two-way radio conversation; and

(b) Shall be a high school graduate or what is deemed by the Administrator to be its equivalent from the applicant's showing of general experience and aeronautical experience, knowledge, and skill.

21.14 *Physical condition.* Applicant shall meet the physical standards of the First Class prescribed in Part 29 of this subchapter.

21.15 *Aeronautical knowledge.* Applicant shall be familiar with and shall accomplish a satisfactory written examination on:

(a) The provisions of Parts 1, 21, 27, 40, and 60 and 61 of this subchapter, together with such parts of the provisions of Part 4a and 4b of this subchapter as are pertinent to the operations of air carrier aircraft.

(b) The fundamentals of air navigation and the use of formulas and of instruments and other navigational aids, both in aircraft and on the ground, which are deemed necessary for the navigation of aircraft by instruments.

(c) The general system of weather collection and dissemination.

(d) Weather map, weather forecast, and weather sequence abbreviations, symbols, and nomenclature.

(e) Elementary meteorology, including modern knowledge of the cyclones as associated with fronts.

(f) Cloud forms.

(g) Department of Commerce Weather Bureau Circular N, Instructions for Airway Meteorological Service, and all amendments thereto.

(h) Weather conditions, including icing conditions and upper-air winds, affecting aeronautical activities.

(i) Air navigation facilities in use on the civil airways, including rotating beacons, course lights, radio ranges, and radio marker beacons.

(j) Data obtained from airplane weather observations and meteorological data reported from observations made by pilots engaged in air carrier flights.

(k) The influence of terrain upon meteorological conditions and developments, and the relation thereof to air carrier flight operations.

(l) Radio communication procedure as applied to aircraft operation.

(m) The basic principles of loading and weight distribution and its effect on flight characteristics.

21.15–1 *Written examination (CAA policies which apply to sec. 21.15).*

(a) *Eligibility.* The airline transport pilot rating written examination will be given to any person who meets the eligibility requirements of sections 21.9 through 21.14 and 21.16.

(b) *Contents.* The examination consists of four sections: (1) Civil Air Regulations, (2) meteorology, (3) radio navigation, and (4) radio operations and procedures; each of which is graded separately. A minimum grade of 70 percent is required to pass each section.

(c) *Substitution of credit.* An applicant may be credited with the successful completion of the meteorology section of the airline transport pilot rating written examination if he possesses a currently valid flight navigator's certificate or an instrument rating or if, within the last 2 years, he has successfully completed the meteorology section of either the flight navigator or instrument rating examination. An applicant may be credited with successful completion of the radio navigation section of the airline transport pilot examination if he possesses a currently valid flight navigator's certificate or if, within the last 2 years, he has successfully completed the air navigation section of the flight navigator examination. If, however, the applicant has previously taken the airline transport pilot examination and failed to pass these sections, he may not substitute such credit for the written examination.

(d) *Examination procedures.* The examination consisting of the four sections mentioned in paragraph (b) should be completed within one 6-hour session, except that the supervising agent may, at his discretion, allow extra time in special circumstances. No examination may be started unless sufficient time remains to complete the examination before the end of regular office hours.

(e) *Report of grades.* A report of grades received, Form ACA-578A, will be mailed direct to the applicant. Form ACA-578A will be accepted within a period of 24 months from the date of the examination as evidence of the applicant's having successfully completed the knowledge requirements for an airline transport pilot rating. A Form ACA-578A, acceptable on September 1, 1956, will be accepted by the Administrator until September 1, 1958.

Exception: Form ACA-578A will be accepted by the Administrator from an applicant during the applicant's period of employment with an air carrier or operator, provided the applicant has been continuously employed since taking the examination, as a pilot with an air carrier or operator, and during this period of employ-

ment actively participates in a pilot training program conducted by the air carrier or operator.

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21.16 *Aeronautical experience.* An applicant for an airline transport pilot rating shall hold a valid commercial pilot rating, or equivalent as determined by the Administrator, and shall meet the following aeronautical experience requirements:

(a) Applicant shall have had at least 250 hours of flight time composed of time as pilot-in-command, or time as copilot actually performing the duties and functions of a pilot-in-command under the surveillance of the pilot-in-command, or any combination thereof. Of this time, at least 100 hours shall have been cross-country flight time, and at least 25 hours shall have been night flight time. Flight time shown in fulfillment of the requirements of this paragraph may also be used for the purposes of paragraph (b).

(b) Applicant shall have had at least 1,200 hours of flight time as pilot within the last 8 years, of which

(1) 5 hours shall have been had within 60 days immediately preceding the date of application;

(2) 500 hours shall have been cross-country flight time;

(3) 100 hours shall have been night flight time;

(4) 75 hours shall have been instrument time under actual or simulated instrument conditions of which not less than 50 hours shall have been in actual flight.

(c) An applicant who meets the requirements of paragraph (a) with other than 250 hours of pilot-in-command time shall have his certificate appropriately endorsed by the Administrator in accordance with Article 39 of the Convention on International Civil Aviation. At such time as the holder of a certificate so endorsed submits reliable documentary evidence to the Administrator that he has met the requirements of paragraph (a), taking into account only time as pilot-in-command, he shall be reissued a certificate without such endorsement.

NOTE: By the terms of Article 40 of the Convention on International Civil Aviation, no person having a certificate endorsed in accordance with the foregoing provision may participate in international navigation as pilot-in-command except with the permission of the State or States whose territory is entered.

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21.16–1 *Aeronautical experience (CAA rules which apply to sec. 21.16).*

(a) The following shall be considered to hold the equivalent of a United States Commercial Pilot Rating Certificate:

(1) Pilots of the U. S. armed services whose military experience qualifies them for commercial certificates under section 20.55 (b).

(2) Holders of foreign airline transport pilot or commercial pilot licenses without limitations issued by member states of ICAO.

(b) The holding of the equivalent of a commercial pilot rating shall permit the holder thereof to meet the requirements of sections 21.17 (a) (1) through (7) and 21.18 (b).

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21.16–2 *Evidence of flight experience (CAA policies which apply to sec. 21.16).*

(a) Flight experience required by section 21.16 should be substantiated by a logbook maintained in accordance with the requirements of section 43.43 of this subchapter.

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21.16–3 *Copilot experience (CAA policies which apply to sec. 21.16 (a)).* A copilot employed by a certificated air carrier may credit "as copilot actually performing the duties and functions of a pilot-in-command under the surveillance of the pilot-in-command" that time during which he performs all the functions of the pilot-in-command [1] including landings and takeoffs, en route flying, low approaches, and ground functions.

(a) Flight time credited in this manner is subject to the provisions of section 43.44 (b) (2) of this subchapter.

(b) The actual flight time should be recorded and certified by the pilot-in-command under whose supervision the functions were accomplished.

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[1] An air carrier should determine that a copilot has had sufficient time and experience and has demonstrated his ability to perform efficiently the duties of a copilot before permitting him to perform the functions of a pilot-in-command for the purpose of logging "pilot-in-command time."

21.17 *Aeronautical skill.*

(a) Applicant shall demonstrate satisfactorily his ability to pilot aircraft in normal takeoffs, turns, landings, and the following maneuvers (the maneuvers in subparagraphs (6) and (7) of this paragraph shall be performed in an aircraft satisfactory to the examining inspector of the Administrator):

(1) From 3,500 feet, with engine throttled, a 360° turn and a landing in normal landing attitude.

(2) From 2,500 feet, with engine throttled, a 180° turn and a landing in normal landing attitude.

(3) A series of three shallow and three steep figure 8 turns and one 720° steep power turn in each direction. During these maneuvers, the pilot shall not gain or lose more than 200 feet of altitude.

(4) A spiral in one direction from 3,500 feet, or higher, with engine throttled, and a landing in normal landing attitude.

(5) Subparagraphs (1) through (4) of this paragraph shall be applicable when the flight tests are conducted in aircraft of a gross weight in excess of 10,000 pounds; otherwise, the pilot shall be required to demonstrate his aeronautical skill in accordance with section 20.26 of this subchapter.

(6) Emergency maneuvers such as simulated forced landings, spirals, side slips and climbing turns, and recovery from stalls, maneuvers in multiengine equipment with authorized load with one engine inoperative, if rating is sought on such equipment, and such other maneuvers as the examining inspector of the Administrator may deem necessary to demonstrate the competence of the applicant.

(7) A right-hand and a left-hand spin, each of at least two full turns, with not to exceed 10 degrees error.

NOTE: The requirements of subparagraphs (1)–(7) of this paragraph and of section 21.18 (b) may be met by the holding of a valid commercial rating.

(b) Applicant shall accomplish satisfactorily a flight test, solely by instruments, with respect to the following:

(1) Straight level flight for a given period of time.

(2) Moderate banks during 180° and 360° turns in both directions.

(3) Minimum glides and maximum climbs, and approaches to stalled attitudes of flight.

(4) Climbing turns.

(5) Stalls, skids, slips and spirals, and banks in excess of 45°, and recovery from the same.

NOTE: The requirements of subparagraphs (1)–(5) of this paragraph may be met by the holding of a valid instrument rating.

(6) Such other maneuvers as the examining inspector deems necessary.

(7) A practical demonstration, while in flight or under simulated conditions, of estimating arrival time, taking into account speed, wind, and drift.

21.17–1 *Aeronautical skill (CAA policies which apply to sec. 21.17).*

(a) An applicant will satisfactorily demonstrate the following maneuvers to an Aviation Safety Agent or a designated airline transport pilot examiner by means of a flight check.[2] This flight check may not be taken until the written examination has been satisfactorily completed and the applicant has complied with the requirements of section 21.31.

(b) The following list of maneuvers will be specifically required for airline transport rating in multiengine aircraft:

Equipment examination (oral).
Preflight check.
Taxiing, or sailing and docking.
Runups.
Takeoffs.
Climbs and climbing turns.[3]
Maneuvering at slow speed.
Approaches to stalls.
Airport traffic pattern.
Landing technique.
Crosswind takeoff and landing.
Traffic control procedure.
Steep turns (instruments only).
Timed turns.[3]
Recovery from unusual attitudes.
Use of radio equipment.
Orientation.
Beam bracketing.
Cone (station) identification.
Instrument approach procedures.

[2] The examiner or agent will determine the order in which the maneuvers are to be accomplished. See appendix A for detailed information relating to the required maneuvers.

Missed approach procedures.
Use of directional radio.
Rapid descent and pull-up.
Engine(s) out procedure.
Maneuvering with engine(s) out.
Maneuvering for landing at weather minimums.
Takeoff and landing with engine(s) failure.
Emergencies.
Smoothness and coordination.
Judgment.

(c) The following list of maneuvers will be specifically required for airline transport pilot rating in single-engine aircraft:

Equipment examination (oral).
Preflight check.
Taxiing, or sailing and docking.
Runup..
Takeoffs.
Climbs and climbing turns.[3]
Maneuvering at slow speed.
Stalls.
Airport traffic pattern.
Accuracy approaches and spot landings.
Landing technique.
Crosswind takeoff and landing.
Traffic control procedures.
Steep turns (instrument only).
Timed turns.[3]
Recovery from unusual attitudes.
Use of radio equipment.
Orientation.
Beam bracketing.
Cone (station) identification.
Instrument approach procedures.
Missed approach procedures.
Use of directional radio.
Rapid descent and pull-up.
Maneuvering for landing at weather minimums.
Emergencies.
Smoothness and coordination.
Judgment.

(d) The following list of maneuvers will be specifically required of ATR multiengine pilots who apply for additional type ratings:

Equipment examination (oral).
Preflight check.
Taxiing, or sailing and docking.
Runups.
Takeoffs.
Maneuvering at slow speed.
Approaches to stalls.
Airport traffic pattern.
Landing technique.
Cross-wind takeoff and landing.
Traffic control procedures.
Steep turns (instrument only).
Recovery from unusual attitudes.
Use of radio equipment.
Instrument approach procedures.
Missed approach procedures.
Rapid descent and pull-up.
Engine(s) out procedure.
Maneuvering with engine(s) out.
Maneuvering for landing at weather minimums.
Takeoff and landing with engine(s) failure.
Emergencies.
Smoothness and coordination.
Judgment.

[3] Not required if applicant holds instrument rating.

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21.18 *Radio skill.*

(a) An applicant shall demonstrate his ability to interpret International Morse Code signals, and shall accomplish a satisfactory flight test in a hooded cockpit with respect to the following:

(1) Tuning radio.

(2) Orientation. Such orientation shall include the use of the radio direction finder with sufficient tests to determine the ability of the pilot to:

(i) Home on a radio station.

(ii) Determine whether the aircraft is heading toward or away from the station.

(iii) Obtain accurate fixes by the use of radio compass.

(3) Following radio range.

(4) Locating cone of silence.

(5) Letting-down-through on the range by the approved instrument approach procedure for the particular airport used in connection with the test.

(6) Such other maneuvers as the examining inspector deems necessary.

(b) Such maneuvers as are necessary to demonstrate competence to satisfactorily pilot

an aircraft from either control seat. None of the maneuvers provided for in sections 21.17 and this section shall be disregarded, but any such maneuver may be modified by the examining inspector of the Administrator to such extent as may be necessary for reasonable and safe operation of the aircraft used in the particular maneuver. Such inspector will report any such modification to the Administrator in writing.

Airline Transport Pilot Competency Certificate

21.20 ***Aircraft rating.*** **The aircraft which the applicant is deemed competent to pilot shall be prescribed in his certificate by category and class, and type if the aircraft has a maximum certificated takeoff weight of 12,500 lbs. or more and, in the case of unconventional airplanes, such description as is appropriate to define clearly the competence of the applicant. Competence to pilot aircraft shall be demonstrated in aircraft of the category and class and, if appropriate, the type for which the rating is sought.**

21.20–1 *Aircraft rating (CAA policies which apply to sec. 21.20 (a)).* Flight test maneuvers as outlined in section 21.17–1 (d) will be used in determining competency of airline transport pilots for aircraft ratings sought by them in accordance with this section.[4]

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21.21 ***Application.*** **Application for an airline transport pilot certificate shall be made to the Administrator upon a form supplied for the purpose.**

(a) ***Application to amend.*** **When any change in an airline transport pilot competency rating is desired, the applicant shall file a written request therefor with the Administrator upon a form supplied for the purpose.**

(b) ***Revocation.*** **No person whose airline transport pilot certificate has been revoked shall apply for or be issued a pilot certificate of any grade or rating for a period of 1 year after the revocation, except as the order of revocation may otherwise provide.**

21.21–1 *Application (CAA policies which apply to sec. 21.21).* Application for an Airline Transport Pilot Rating Certificate will be made on Form ACA–342A. This form can be obtained from a representative of the Administrator at any regional, district, or field office. Application must be presented in person to an Aviation Safety Agent or a designated airline transport pilot examiner.

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21.21–2 *Application to amend (CAA policies which apply to sec. 21.21 (a)).*

(a) Application for an amendment to the Airline Transport Pilot Rating Certificate will be made in accordance with procedures set forth in section 21.21–1.

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21.22 ***Issuance.*** **Upon approval of an application duly made, proofs submitted and examinations and tests satisfactorily completed, an airline transport pilot certificate will be issued in an appropriate form.**

(a) ***Temporary certificate.*** **Following application made for an airline transport pilot certificate, but prior to approval thereof and issuance of the certificate, a temporary airline transport pilot certificate may be issued by the examining inspector of the Administrator.**

(b) ***Special ratings.*** **A special rating, except an instrument rating, will be issued to and renewed for the holder of a valid airline transport pilot certificate pursuant to the provisions of sections 20.40–20.42, and upon the same terms as such rating is issued to and renewed for the holder of a valid commercial pilot certificate.**

(c) ***Instruction in air transportation service.*** **Any person holding a valid airline transport pilot rating shall be considered competent to instruct other pilots in air transportation service in aircraft of a category, class, and type specified in the airline transport pilot rating of the instructing pilot. No pilot shall give more than 8 hours of such instruction in any one day nor more than 36 hours in any 7-day period. Such instruction shall be given only in aircraft equipped with fully functioning dual controls.**

[4] See appendix B for various type ratings.

21.22–1 *Issuance (CAA policies which apply to sec. 21.22 (a)).* After the applicant has satisfactorily completed both the written examination and flight test, he will be issued a temporary certificate, Form ACA–1710T. This certificate may be issued by an Aviation Safety Agent only. Hence, if the flight test has been given by a designated examiner, the applicant must obtain a properly endorsed Form ACA–342A from him for presentation to an Aviation Safety Agent who will issue the ACA–1710T. Permanent certificates will be issued from Washington, D. C.

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21.23 *Display.* An airline transport pilot certificate shall be kept in the personal possession of the pilot at all times when piloting aircraft, and shall be presented for inspection upon the demand of any passenger, or of any authorized official or employee of the Administrator or Board or any State or municipal official charged with the duty of enforcing local laws or regulations involving Federal compliance, or upon the reasonable request of any other person.

21.24 *Duration.*

(a) An airline transport pilot certificate issued to a United States citizen shall remain in effect until surrendered, suspended, revoked, or otherwise terminated by order of the Board. A certificate issued to an applicant other than a United States citizen shall remain in effect for a period no longer than 12 months after the date of issuance, but it may be reissued without further demonstration of technical competence.

(b) A temporary airline transport pilot certificate shall remain in effect for a period no longer than 3 months after the date of issuance.

(c) After revocation, and upon request after suspension, the certificate shall be returned to the Administrator.

(d) Nothing in this section shall be construed to deny or defeat the jurisdiction of the Federal courts, the Administrator, or the Board to impose any authorized sanction, including revocation of the certificate, for a violation of the Act or of the Civil Air Regulations occurring during the effective period of the certificate.

(e) Upon application to the Administrator, a person who on April 30, 1953, held a valid airline transport pilot certificate showing horsepower ratings and who has failed to exchange such certificate may, notwithstanding such failure and without further showing of competence, obtain an airline transport pilot certificate showing the aircraft category and class ratings and any aircraft type ratings for which he was qualified on April 30, 1953: *Provided,* That the holder of such certificate has:

(1) Passed an official rating test, as prescribed by the Administrator, in that type aircraft; or

(2) Successfully accomplished, in that type aircraft, a pilot ground and flight training program acceptable to the Administrator; or

(3) Served as pilot-in-command and sole manipulator of the controls of that type aircraft for at least 10 hours since May 1, 1949, and such aircraft was within his category, class, and horsepower ratings.

Such a person may also reinstate any pilot or other special ratings shown on the expired airline transport pilot certificate.

NOTE: All airline transport pilot certificates showing horsepower ratings expired May 1, 1953.

21.25 *Nontransferability.* An airline pilot certificate is not transferable.

21.26 *Operation during physical deficiency.* A certificated airline transport pilot shall not operate any aircraft during the period of any known physical deficiency or increase in physical deficiency which would render him during that period unable to meet the physcial requirements with which he complied in order to secure his certificate.

21.27 *Termination of certificates.* A certificate issued to an applicant other than a United States citizen shall remain in effect for a period no longer than 12 months after the date of issuance; however, it may be reissued without further demonstration of technical competence.

21.28 *Reexamination.*

(a) An applicant who has failed any prescribed theoretical examination may apply for reexamination at any time after the expiration of 30 days from the date of such failure or after he has received not less than 5 hours instruction in each subject failed from a person em-

ployed by an airline to instruct in such subject or from whichever one of the following persons is appropriate:

(1) A certificated airline transport pilot;

(2) A certificated ground instructor rated for the subject;

(3) A person qualified to instruct in the theory of instrument flight.

(b) An applicant who has failed to pass any prescribed practical examination or test may apply for reexamination only after (1) he has logged at least 5 additional hours of flying solely by instruments and at least 5 additional hours of dual flight instruction with a certificated flight instructor or a certificated airline transport pilot, or (2) he has acquired such part of the above practice or instruction as may, in the opinion of the Administrator, warrant reexamination. Upon meeting the requirements of this paragraph an applicant for reexamination shall be deemed to meet the 5 hours flight time requirements set forth in section 21.16 (b) (1).

(c) Applicant shall present a statement from the instructor indicating that he has given the required instruction and that he deems the applicant qualified to pass the flight test or that part of the theoretical examination in which such instruction was given, whichever is appropriate.

21.28–1 *Reexamination (CAA policies which apply to sec. 21.28 (b)).*

(a) An applicant who has failed any maneuver (or maneuvers) will be issued a Form ACA–666 which will list specifically the maneuvers which he failed. In a reexamination only the maneuvers failed [5] need be repeated.

(b) Form ACA–666 must be submitted to the agent or examiner prior to reexamination, together with satisfactory evidence that the additional flight time requirements required in section 21.28 (b) have been met.

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21.28–2 *Instrument flight instruction (CAA policies which apply to sec. 21.28 (a) (3)).* An instructor employed by an air carrier or by a certificated flying school to instruct in courses pertinent to the theory of instrument flight will be considered to qualify under this section.

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[5] The number and relative importance of the maneuvers specified in section 21.17-1 which have been failed will be used as a guide in determining how many hours of flight time are required prior to reexamination.

21.29 ***Change of address.*** **Within 30 days after any change in the permanent mailing address of a holder of a pilot certificate with an airline transport pilot rating, the holder shall notify the Administrator in writing of such change. Such notice shall be mailed to the Administrator of Civil Aeronautics, attention Airman Records Branch, Washington 25, D. C.**

Examinations and Tests

21.30 ***General.*** **The examinations and tests prescribed in the regulations of this part (both for an airline transport pilot certificate and for the ratings issued with respect thereto) will be conducted by an authorized officer or employee of the Administrator or by a properly qualified person designated for the purpose by the Administrator. During the flight tests the air carrier may have a check pilot on board.**

21.31 ***Physical examination.*** **In connection with the original issuance of any airline transport pilot certificate the physical examination prescribed shall be accomplished by a medical examiner of the Administrator of Civil Aeronautics, duly authorized to so examine such pilots, before any practical or theoretical test or other examination will be given, and shall be completed within the 6 months preceding the date of filing application for such pilot certificate.**

21.32 ***Time and place.*** **All examinations and tests will be held at such times and places as the Administrator may designate.**

21.33 ***Aircraft used in tests.*** **The applicant shall furnish a certificated aircraft for any flight test involved. Each such aircraft, used in any test for an airline transport pilot certificate shall be equipped with dual controls and shall accommodate the applicant and the inspector. Aircraft having only one elevator and aileron control for two seats, or any arrangement whereby all flight and engine controls cannot be handled in a normal or conventional manner from either seat, are not considered as having dual controls for the purpose of flight tests for pilot ratings. Each such aircraft shall have adequate vision for the pilot and check pilot.**

21.33–1 *Aircraft used in tests (CAA interpretations which apply to sec. 21.33).*

(a) Aircraft used to accomplish flight tests for airline transport pilot ratings may be (1) properly certificated aircraft of U. S. registry; or (2) at the discretion of the agent or examiner, aircraft of foreign registry properly certificated by the authorities of the country in which it is registered; or (3) at the discretion of the agent or examiner, military aircraft on operational status if permission of the appropriate military authority is obtained.

(b) A suitable hood must be provided by the applicant for the aircraft used. The hood must completely exclude from the applicant all outside forward visual reference and yet not unduly restrict the vision of the agent or examiner.

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21.34 *Aircraft category rating.* For purposes of specifying the category of aircraft which the applicant is deemed competent to pilot and for convenience in examining and rating the applicant with respect thereto, aircraft are categoried as follows:

(a) Airplane;

(b) Autogiro;

(c) Glider;

(d) Lighter-than-air aircraft.

21.35 *Airplane class and type rating.*

(a) *Airplane class rating.* For purposes of specifying the class of airplane which the applicant is deemed competent to pilot and for convenience in examining and rating the applicant with respect thereto, airplanes are classed as follows:

(1) Single-engine, land;

(2) Single-engine, sea;

(3) Multiengine, land;

(4) Multiengine, sea;

(5) Unconventional.

(b) *Type rating.* An aircraft type rating shall be issued for each type of aircraft having a maximum certificated takeoff weight of over 12,500 lbs.

21.36 *Inspection.* The applicant for an airline transport pilot certificate shall offer full cooperation in respect of any inspection or examination which may be made of said applicant upon proper demand by any authorized representative of the Administrator prior or subsequent to the issuance of such certificate.

21.37 *Standard of performance.* Every practical and theoretical examination and test shall be accomplished to the satisfaction of the Administrator and the minimum passing grade in the subject of examination or test shall be 70 percent. Each flight maneuver will be graded separately. Other examinations will be graded as a whole.

21.38 *Reports.* The person giving any examination or test in behalf of the Administrator will report the result thereof upon an appropriate form to the Administrator and all data collected incident to such examination or test will be considered as of a confidential nature by such persons and by all employees of the Civil Aeronautics Administrator.

Pilot Regulations

21.40 *Certificated airline transport pilots.*

(a) Rating limitations. No certificated airline transport pilot shall operate any aircraft other than in accordance with the rating limitations set forth in his pilot certificate: *Provided,* That the holder of a valid air-line transport pilot certificate may pilot airplanes:

(1) As a second pilot without an airplane class and horsepower rating for the particular airplane operated;

(2) As a first pilot of a class or within a horsepower range other than that specified in his airline transport pilot certificate, but he shall not carry any person in such airplanes other than members of the crew thereof, certificated airmen carried in air carrier airplanes in furtherance of their official duties, or a certificated instructor rated for the airplane operated.

(b) *Periodic physical examinations.* A certificated airline transport pilot shall not pilot an aircraft in operations for which he is required to possess an airline transport pilot rating unless, within the preceding 6 calendar months, he has met the physical requirements of this part by passing an examination given by an authorized airline medical examiner of the Administrator.

(c) *Medical certificate.* A medical certificate issued by an authorized airline medical examiner of the Administrator or other evidence satisfactory to the Administrator that the pilot

has met the physical requirements of this part shall be carried by such pilot while piloting aircraft.

21.40-1 *Retention of existing ratings upon issuance of a pilot certificate of a higher rating (CAA policies which apply to sec. 21.40).*

(a) The holder of a commercial pilot certificate who qualifies for an airline transport pilot certificate may retain all of his commercial pilot certificate ratings. However, when such ratings are endorsed on his airline transport pilot certificate, he may exercise only the privileges of a commercial pilot in respect to such ratings. In order to exercise such privileges he must hold a first class medical certificate issued within the past 12 calendar months.

(Published in 21 F. R. 7371, Sept. 27, 1956, effective Oct. 15, 1956.)

21.41 *Passenger carrying.* A certificated airline transport pilot shall not pilot any aircraft carrying any person other than members of the crew thereof, certificated airmen carried in air carrier aircraft in furtherance of their official duties, or a certificated instructor rated for the aircraft operated, unless, within the 90 days immediately preceding, he shall have made at least 3 takeoffs, and 3 landings to a full stop, in an aircraft of the same category (sec. 21.34) and if an airplane, within the same class (sec. 21.35 (a)) as that of the aircraft in which any such person is carried.

21.42 *Recent experience requirements.*

(a) *Passenger flight (day and night).* A certificated airline transport pilot shall not pilot an aircraft carrying any person other than the members of the crew thereof, certificated airmen carried in air carrier aircraft in futherance of their official duties, or a certificated instructor rated for the aircraft operated, unless within the preceeding 3 calendar months he shall have made and logged at least 3 takeoffs and landings to a full stop in an aircraft of the same category, class, and type as that of the aircraft in which such person is carried.

(b) *Instrument flight.* A certificated airline transport pilot, who within the preceding 6 calendar months has not flown and logged at least 2 hours of flight time solely by reference to instruments under either actual or properly simulated instrument flight conditions, shall not pilot an aircraft under such conditions until he has flown and logged at least 2 hours of such flight time accompanied by a certificated pilot of at least private grade holding an appropriate category, class, and type rating for the aircraft and authorized to operate aircraft under instrument conditions.

21.43 *Instruction.* No person holding a valid airline transport pilot certificate shall give flying instruction, except as provided for in section 21.22 (c), unless possessed of a valid instructor rating.

21.44 *Logbooks.* The following rules will govern pilot logbooks:

(a) *General.* Every certificated airline transport pilot shall keep an accurate record of his flying time in a logbook in which the entries as to solo flying time have been certified to by him and the entries as to instruction have been certified to by his instructor. Logbooks shall be bound records and the entries shall be accurate, legible, in ink or indelible pencil, and so arranged as to facilitate easy reference thereto.

(b) *Contents.* The logbook shall contain the date of flight, the category, class, and type of aircraft flown, the aircraft certificate number, a statement of pilot in command, dual instruction, instrument and night flight time, the duration of the flight, the points between which such flight was made, and, in addition, when any flight results in serious damage to the aircraft, a notation to this effect. Dual instruction time shall be logged in the same manner and, in addition, the instructor shall make complete entries in the logbook of his student showing the nature of each maneuver in which instruction was given and the time spent thereon. The instructor shall attest each such entry with his initials, pilot certificate number, and pertinent rating. This logbook shall be presented for inspection, upon demand and reasonable notice, to any authorized representative of the Administrator or Board or State or municipal officer enforcing local regulations or laws involving Federal compliance.

(c) *Logging of pilot flight time.* The holder of an airline transport pilot certificate may log the total flight time while acting as pilot in command or copilot.

(d) *Logging instrument flight time.* Instrument flight time may be logged as such

only when the aircraft is flown solely by reference to instruments either under actual or properly simulated flight conditions. (Over-the-top flying shall not be logged as instrument flight time.)

(e) *Reports.* The holder of an airline transport pilot certificate shall furnish the authorized airline medical examiner of the Administrator, at the time of each physical examination to be forwarded by him to the Administrator, a report setting forth the amount and type of his aeronautical experience and such other pertinent data as the Administrator may require since his last preceding report.

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Appendix A

Guide to Satisfactory Performance of Required Maneuvers

The required flight maneuvers are explained below, together with a guide as to required performance

Equipment Examination (Oral)

Prior to starting the actual flight test, the applicant will demonstrate an adequate knowledge of the engine, airplane, and equipment to be used. The agent or examiner will ask questions covering the following subjects: Loading, engine power settings, airplane placard speeds, critical engine failure speeds in multiengine airplanes, control systems, fuel and lubrication systems, propeller and supercharger operation, and the hydraulic landing gear, wing flap, and electric systems.

Special attention will be given to radio equipment, anti-icing, heating and ventilating, fire control, pressurization (if airplane is pressurized), operational characteristics, and emergency procedures.

Emphasis will be placed on practical operation and not on technical aspects.

Preflight Check

Applicant will be required to conduct a visual inspection of the exterior, interior, and cockpit of the airplane, including engine(s), propeller(s), wings, fuselage, landing gear, and control surfaces. He will be expected to identify and present, if requested, the required certificates and operation manuals. Starting procedure, use of check list, and check of radio equipment will be considered in grading this item.

Taxiing (or Sailing and Docking)

Applicant will demonstrate acceptable taxi methods, including smooth use of throttle and brakes, S-turns when necessary, safe taxiing speed, correct use of controls with reference to wind direction, use of tail wheel lock, proper compliance with tower instructions, the check of directional instrument while taxiing, and proper checking of hydraulic pressures and engine temperatures.

Runup

The applicant will demonstrate the recommended procedure in the runup of the engine or engines to check ignition, engine accessories, smooth performance and proper engine power output. The proper use of check list, and of giving proper instructions to other members of the crew and seeing that they are properly carried out will also be demonstrated.

Takeoffs

Applicant will be required to demonstrate normal safe, smooth, and straight takeoffs, attaining recommended climbing speed before starting climb, correcting for drift during takeoff and climb, proper instructions to the crew and proper use of all accessories, such as controllable propeller, retractable landing gear, and wing flaps.

Climbs and Climbing Turns [6]

The applicant will be required to demonstrate normal uniform climbs and climbing turns in both directions without slip or skid maintaining normal climb speeds and constant rates of turn. Climbs and climbing turns will be made at a predetermined rate of climb known to be within the performance capabilities of the airplane used. Applicant will be rated on the basis of his use of the proper amount of power, ability to hold a uniform air speed, his ability to hold his heading in straight climbs, and to hold a constant rate of turn in either direction.

Maneuvering at Slow Speed [6]

The applicant will be required to perform straight and level flight, level flight turns and climbing and gliding turns at slow speeds.

The applicant will be judged on his ability to hold such slow flight, to maintain altitude and

[6] Must be performed under the hood.

heading, and to avoid unintentional stalls. The transition to and from slow flight should be smooth, prompt, and without change of altitude or heading.

Approaches to Stalls [6]

Approaches to stalls in multiengine aircraft will be demonstrated from straight flight and turns, with and without power, using the full panel. Approaches to stalls will be executed with various configurations of landing gear and flap extension.

Performance will be judged on ability to recognize the approach to stall, prompt action in initiating recovery, and the holding of heading and smooth recovery with the minimum loss of altitude.

Stalls [6]

In single engine aircraft full stalls will be required. Stalls will be demonstrated in the same configurations and judged in the same manner as approaches to stalls are demonstrated and judged in multiengine aircraft.

Airport Traffic Pattern

Applicant will be required to demonstrate his ability to properly execute a recognized pattern approach to a landing at an airport.

Performance will be judged on the applicant's ability to control and judge position of the airplane in the landing pattern, determine properly the time to begin descent, control descent and air speed with the minimum throttle adjustment, and to approach so as to land on the first third of the runway without having to resort to excessive corrective maneuvers, and his use of the check list prior to landing.

Accuracy Approaches and Spot Landings

Single Engine Airplane Only

The applicant will be required to make a series of three landings from an altitude not to exceed 1000 feet with the engine throttled, and 180° change in direction; the airplane touching the ground in a normal landing attitude beyond and within 200 feet from a designated line. At least one landing will be accomplished from a forward slip.

Because of the universal acceptance of the rectangular traffic pattern, the completion of 180° approaches using two 90° turns with a straight base leg is preferred, although circular approaches are acceptable.

Performance will be judged on the basis of planning, control of air speed, correction for wind drift on base leg, coordination, and ability to hit the desired mark. Any violent maneuvering or excessive slips, or dangerously slow air speeds will be disqualifying.

Landing Technique

Applicant will be required to make a normal approach and landing without the use of flaps in addition to demonstrating the use of flap configuration appropriate to the type of approach being used.

Performance will be judged on the applicant's ability to control and judge position of the airplane in the landing pattern, to control descent and air speed with the minimum throttle adjustment, and to approach so as to land on the first third of the runway, and his use of check list prior to landings.

Cross-Wind Takeoffs and Landings

The applicant will demonstrate normal cross-wind takeoffs and landings with or without flaps, using any accepted technique.

Performance will be judged on the ability to land without drift, technique in correcting drift on final approach, judgment in the use of flaps, and directional control during roll-out.

Traffic Control Procedures

Applicant will be required to contact ATC to obtain airways traffic clearance and to fly that clearance, making all necessary position reports and acknowledging and observing all clearances. ATC contacts may be simulated if actual clearances are impracticable, and simulated holding procedures will be required.

Performance will be judged on the basis of correct radio procedures, with emphasis upon the applicant's ability to take and read back complicated clearances, and adherence to such ATC clearances.

Steep Turns (Instruments Only) [6]

180° and 360° turns up to 45° of bank, depending on the airplane used will be required using full panel. As a guide the altitude variation should be less than plus or minus 100 feet.

[6] Must be performed under the hood.

Consideration will be given to other factors, such as turbulence, which may make compliance with the above limits impractical.

Timed Turns [6]

Applicant will be required to make turns of 90°, 180°, and 360° duration in each direction, and turns to desired headings, using the rate instruments only.

Standard rate turns of 360° duration should be executed with an error of less than 10° in smooth air. All turns must be accomplished with less than 100 feet plus or minus variation in altitude.

Performance will be judged on the basis of accuracy of heading, ability to hold altitude and air speed, coordination, and timing.

Recovery From Unusual Attitudes [6]

The aircraft will be placed in attitudes unusual to normal flight and the applicant will be required to recover to straight and level flight using the full panel. Such attitudes may include near stalls, diving spirals, abnormal skids and slips, and steep climbing turns or glides.

Performance will be judged on the basis of the applicant's ability to return to normal flight smoothly, without exceeding safe air speed limits, and without placing undue stress on the airplane. Particular care should be taken to preclude allowing the airplane to exceed any placarded speeds, design loads, or any other limitations in the airplane flight manual.

Use of Radio Equipment

The applicant will demonstrate his knowledge of where to find the frequencies for all CAA radio aids. He must demonstrate his ability to properly tune to all radio aids which he elects to use on the flight test.

He must recognize a properly-tuned signal from a distorted one, and know the uses of automatic and manual volume controls, the CW selector, and the voice and range filter.

He must know where to find and how to use the proper frequencies for ground and air control by airport control towers, and for contacting approach control, and Air Route Traffic Control.

Performance will be judged on the basis of proper frequency selection, filter selection, and use of volume control.

Orientation [6]

Orientation may be demonstrated by any accepted method practicable for the radio aid being used. Use of the rate instruments alone, or full panel will be at the discretion of the agent or examiner.

In the event the applicant elects to use VAR, VOR or ADF (MDF) for his orientation in flight, he will also be required to demonstrate an orientation using the current low frequency range system. This demonstration may be made in either an airplane or a synthetic trainer.

Performance will be judged on the basis of the selection of the best orientation method, the identification of radio signals, proper maneuvering of the airplane, ability to hold altitude and headings, cone (station) identification, and coordination.

Beam Bracketing [6]

Applicant will be required to fly along a given range leg or VOR track after intersecting it. He must be able to align himself with the leg after a reasonable number of bracketing corrections, and should be able to promptly estimate drift and average heading required.

Performance will be judged on the basis of planning, coordination, and the ability to hold constant heading and altitude.

Cone (Station) Identification [6]

After orientation and beam bracketing, the applicant will fly directly over the station and verify its location. Time of passing the station should be noted.

Instrument Approach Procedures [6]

The applicant will be required to execute a standard instrument approach procedure for the airport being used. He will be allowed to use only such radio equipment as is allotted him by the agent or examiner.

In the event that ADF, VOR, or ILS are used for the standard instrument approach, an approach using the low frequency range system in either an airplane or a synthetic trainer must also be demonstrated. In the event that this demonstration is being conducted in areas where the low frequency range

[6] Must be performed under the hood.

system is not available, a demonstration using any combination of the above-mentioned systems will be considered satisfactory. For example, an initial approach may be made using ADF or VOR followed by a transition to the ILS for the final approach.

Performance will be based on the applicant's ability to obtain and follow an ATC clearance, his timing, his ability to maintain specified altitude and air speed, adherence to minimum altitudes, and the ability to successfully accomplish the approved procedure to the lowest weather minimums authorized.

Missed Approach Procedures [6]

Applicant must demonstrate the specified missed approach procedure for the airport being used.

Use of Directional Radio [6]

The applicant will be required to estimate time or distance from the station and to track to and from a station on a given bearing using aural null, or ADF. Performance will be judged on the basis of ability to tune the radio properly, a reasonable estimate of time or distance, and the ability to make good given tracks to and from the station.

Rapid Descent and Pull-Up [6]

Applicant will be required to demonstrate maneuvers which involve the exceeding of the normal limits of airline flying. (Note that this does not imply the exceeding of airplane placarded limits.)

The following will be executed at normal approach speed: rapid descent of at least 1,000 feet, followed by level flight of one minute and a climbing 180° turn at maximum rate of climb. This will simulate the letting down to a field surrounded by obstructions, followed by an emergency pull-up. Full panel will be used.

Performance will be judged on the basis of ability to establish a rapid descent at constant air speed, stopping the descent at minimum altitude specified without going below it, holding heading and altitude, and smooth pull up and climb.

Engine(s) Out Procedure

Propeller feathering will be demonstrated on all flight tests in airplanes equipped with propellers which can be feathered and unfeathered in flight without damage to the engine. In other airplanes, engines will be throttled to zero thrust to simulate an emergency. No agent or examiner will require an applicant to feather an engine's propeller or reduce power on an engine on takeoff or in any other critical position where failure of another engine would endanger safety.

The applicant will be graded on his use of the engine out check list, if available, the thoroughness of his cockpit check, and his handling of engine and airplane controls.

Maneuvering With Engine(s) Out [6]

All Flight Tests in Multiengine Airplanes

Applicants will be required to demonstrate emergency procedures in operation of multiengine airplanes with one or more engines *throttled* or cut off, depending on conditions.

Engines should be throttled to approximately zero thrust to simulate loss of an engine in conditions where the failure of another engine would endanger safety.

The applicant will be required to maintain heading, and altitude (if possible), and to make moderate turns both toward and away from the dead engine.

Performance will be judged on the basis of his ability to maintain engine out air speed, heading, and altitude, to trim the airplane and make correct power settings, and to apply the appropriate check list.

Maneuvering for Landing at Weather Minimums

If it is consistent with safety, traffic patterns, local rules and laws, the applicant will be required to demonstrate maneuvering and landing under simulated minimum ceiling and visibility conditions. Ceilings and visibilities may be raised in accordance with the approved CAA minimum for the larger four-engine aircraft.

The agent or examiner will take down the hood after a low instrument approach to the field, and the applicant will be required to complete his landing check list and land on the desired runway without climbing above the assumed ceiling or flying farther than the assumed visibility from the airport boundary.

[6] Must be performed under the hood.

Performance will be judged on the basis of smoothness, use of check list, air speed control, altitude control, and ability to land within the first third of the designated runway.

Takeoffs and Landings With Engine(s) Failure

All Multiengine Flight Tests

Applicant will be required to demonstrate an emergency landing with 50 percent of the available power units. The simulated loss of power shall be on one side of the aircraft. One engine may be throttled after takeoff as soon as engine out speed has been attained. Throttled engines will be kept ready for immediate use in emergencies. No agent or examiner will cause an engine to be throttled in a position where failure of another engine will endanger safety.

Performance will be judged on the basis of ability to hold desired headings, air speed, and altitude, and the use of check list and cockpit procedure.

Emergencies

In single-engine aircraft the applicant will be required to demonstrate satisfactory forced landing procedures. The examiner will use care in throttling the engine to see that it is immediately ready for use in case of emergency, and will not give a simulated forced landing where a safe landing is not possible. Proper use of carburetor heat and clearance of the engine will be responsibility of the applicant.

No simulated forced landing will be continued below 200 feet above the ground, unless an immediate landing is practicable. In no case will flight be continued to altitudes lower than the minimums prescribed by the CAR or local authorities.

Performance will be judged on the basis of planning, coordinating, and **SAFETY.**

In multiengine aircraft, the applicant will be required to demonstrate his knowledge of all emergency procedures associated with specific equipment such as hydraulic, electrical, heating and de-icing, fire fighting and detection, pressurization, oxygen, etc., which is installed in the particular airplane utilized in the flight test. The applicant will interpret correctly all emergency warning signals and, where feasible, conduct satisfactorily the necessary emergency procedures.

Smoothness and Coordination

Smoothness in handling the airplane should not be confused with sufficient motion of the controls to cause the airplane to perform in the desired manner. Abrupt, jerky, or violent action of the controls is seldom necessary, but prompt, firm actions often distinguish the pilot who is doing the flying from one who is "being flown." Smoothness is a term more correctly applied to the action of the airplane than to the movement of the controls.

Coordination involves all actions. The usual criterion is the relative movement of the hands and feet, or between the aileron and rudder controls. Other features are the coordination of elevators, power, and the constant control of heading when the pilot's attention is directed elsewhere.

Performance is judged on the basis of the *applicant's ability to fly the airplane firmly* without rough or abrupt movements, to keep the ball centered, and to use all controls as necessary for flight.

Judgment

Judgment is a most difficult and important factor in the flight test. The pilot's judgment adds to or detracts from his ability and contributes in many cases to accidents. During each portion of the test the agent or examiner should determine whether the pilot exercises proper judgment in the performance of flight maneuvers particularly with respect to simulated emergency situations. However, the use of judgment or the lack of it must not be confused with the use of the proper technique in any given situation such as the making of correct estimates.

The agent or examiner should be alert in determining the manner in which the applicant analyzes each situation and whether or not he makes the correct decisions. The agent or examiner should utilize to the fullest extent maneuvers which require a display of judgment on the part of the applicant.

Grading

In grading an applicant's performance on a flight test, the grading legend on the reverse of Form ACA-342A will be used. The number corresponding to the appropriate adjective description of the performance will be entered

in the space provided for each of the required maneuvers.

A final grade in percent will be entered at the bottom of the flight test report. This final grade will not be an average of the grades on the final maneuvers but will be an over-all appraisal of the applicant's performance.

A failing grade in any one of the required maneuvers will be disqualifying and will necessitate a percent grade of less than 70. The agent or examiner conducting the flight test will, in the event of a disapproval, list in the appropriate space on Form ACA–666 all maneuvers which he deems unsatisfactory, and which must be passed upon reapplication. He will also enter the minimum additional flight time he deems necessary before the applicant may reapply under section 21.28 (b) (2) and (c).

Appendix B

Aircraft Type Ratings

This appendix contains the type ratings which the holder of an airline transport pilot rating may be issued upon meeting the flight test standards applicable thereto.

Aircraft Type Ratings Issued

I. CIVIL AIRCRAFT*

Manufacturer	Model Designations	Certificate Type Ratings
Boeing	247D, or C–73	Boeing 247.
	314	Boeing 314.
	S–307, SA–307B, or SA–307B1	Boeing 307.
	377, or C–97	Boeing 377.
Consolidated Vultee	28–4, 28–5ACF, PBY–5, OA–10, PBY–5A, OA–10A	Consolidated Vultee PBY.
	Convair 240, 340, 440	Convair 240–340–440.
Curtiss-Wright	C–46A, D, E, F	Curtiss-Wright C–46.
Douglas	DC3, C–47, C–48, C–49, C–50, C–51, C–52, C–53, C–68, R4D–1–2–3–4–5–6.	Douglas DC3.
	Super DC–3, R4D–8, R4D–8Z	Douglas DC3S.
	DC–4, C54A–B–C–etc., R5D1–2–3–4–etc	Douglas DC–4.
	DC–6, DC–6A, DC–6B, DC–7, DC–7B, DC–7C, C118A, R6D–1, R6D–1Z.	Douglas DC6–DC7.
	DC–2, C–32, C–33, C–32A, C34, C39, C42, R2D–1	Douglas DC–2.
	B–18	Douglas B18.
	B–23, UC–67	Douglas B–23.
Ford	4AT–B, 4–AT–E, 5–AT–B, 5–AT–C, 5–AT	Ford 5.
Grumman	G–73 or Mallard	Grumman G–73.
Lockheed	14N	Lockheed 14.
	49, 049, 149, 649, 649A, 749, 749A, 1049–B–C–D–E–G, C–69, C–121, R7–VI.	Lockheed Constellation.
	18, C57, C59, C60, R50	Lockheed 18.
Martin	202, 202A, 404	Martin 202–404.
Sikorsky	S43, S43W	Sikorsky S–43.
	VS44A	Sikorsky VS44.
Vickers	744, 745	Vickers Viscount.

*Including civil counterpart of military aircraft.

II. Military aircraft which have been certificated but which have no civilian counterpart will be listed on the certificate by manufacturer and basic military identification; e. g., Boeing B–17.

III. When entering Amphibian types, such as Consolidated PBY, on a certificate, they will be restricted to "Land" or "Sea" unless proficiency has been demonstrated on both land and water, for example: Consolidated Vultee PBY Land. If proficiency is demonstrated on both land and water the type rating will read "Consolidated Vultee PBY Land and Sea."

IV. Applicants for type ratings on aircraft not listed above, or in Safety Regulation Release 277 as certificated in the limited category, will be required to present evidence that at least one aircraft of the type concerned has been certificated by the CAA for civilian use.

V. Type ratings may be issued on experimental aircraft upon satisfactory demonstration of competency to a representative of the Administrator. Such demonstration may be accomplished during the flight testing of the aircraft; e. g. Boeing X 707 or Douglas DC X 8.

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Appendix C

Sample Forms

The following are samples of forms to which reference has been made through Civil Aeronautics Manual 21.

UNITED STATES OF AMERICA
DEPARTMENT OF COMMERCE
CIVIL AERONAUTICS ADMINISTRATION
WASHINGTON

FORM ACA-578A
(5-54)

No. A 678984

A REPORT ON YOUR _____ WRITTEN EXAMINATION

DATED

DO NOT DESTROY

1	2	3	4	5	6	7

SEE REVERSE SIDE FOR INTERPRETATION. MACHINE SCORED ANSWER SHEETS WHICH SHOW GRADES BELOW PASSING ARE HAND-SCORED AS A DOUBLE CHECK BEFORE GRADES ARE ISSUED.

IF THIS FORM IS LOST OR DESTROYED YOU MAY OBTAIN A DUPLICATE FROM THE AIRMAN RECORDS BRANCH, CIVIL AERONAUTICS ADMINISTRATION, WASHINGTON 25, D. C., BY SENDING $1.00 (MONEY ORDER OR CHECK MADE PAYABLE TO THE TREASURER OF THE UNITED STATES) AND STATING THE TITLE OF THE EXAMINATION, THE PLACE WHERE IT WAS TAKEN, AND THE APPROXIMATE DATE.

ISSUED BY
DIRECTOR
OFFICE OF AVIATION SAFETY

PRINTED BY THE STANDARD REGISTER CO. DAYTON 1, OHIO, U. S. A.

FIGURE 1. Form ACA-578A, Report on Written Examination.

APPLICANT—Do not write on this page until you are instructed to do so.
AGENT—Typewrite the certificate in CAPITAL LETTERS. Keep type clean: Use fresh black ribbon.

REG	ASDO	DSN	ASS	ACT	TRNG	M.T.	DIS	CLASS	SEX	RATING	STATE	COUNTY	MEDICAL

THIS CERTIFIES THAT IV

V

III

DATE OF BIRTH	HEIGHT IN.	WEIGHT	HAIR	EYES	SEX	NATIONALITY VI

IX HAS BEEN FOUND TO BE PROPERLY QUALIFIED TO EXERCISE THE PRIVILEGES OF

II _____ NO. III _____

RATINGS AND LIMITATIONS

XII

XIII

VII _____
SIGNATURE OF HOLDER

X DATE OF ISSUE _____

APPLICANT: When instructed to sign your name, confine it to the length of line provided. USE BLACK INK.

14. FLIGHT INSTRUCTOR'S RECOMMENDATION

I HAVE PERSONALLY FLIGHT-CHECKED THIS APPLICANT AND CONSIDER HIM CAPABLE OF ACCOMPLISHING THE FLIGHT TEST FOR THE RATING APPLIED FOR.

INSTRUCTOR'S SIGNATURE

DATE OF FLIGHT CHECK — CERTIFICATE NO. AND RATINGS

15. EXAMINER'S RECOMMENDATION AND ACTION

I HAVE PERSONALLY FLIGHT-TESTED THIS APPLICANT AND

☐ RECOMMEND HIM FOR A _____ CERTIFICATE/RATING.

☐ HAVE ISSUED HIM A TEMPORARY _____ RATING.

☐ HAVE ISSUED HIM A NOTICE OF DISAPPROVAL OF APPLICATION.

SIGNATURE OF EXAMINER

DATE OF FLIGHT CHECK — DESIGNATION NO. — DESIGNATION EXPIRES

16. AGENT'S ACTION

☐ APPROVED ☐ DISAPPROVED ☐ EXAMINER'S RECOMMENDATION ACCEPTED

DATE — SIGNATURE OF AGENT

PAGE 4

U. S. DEPARTMENT OF COMMERCE—CIVIL AERONAUTICS ADMINISTRATION FORM APP'D BUR. BUDGET 41-R159.6

APPLICATION FOR PILOT CERTIFICATE OR RATING

PRINT OR TYPE

(FLIGHT TEST REPORT)

1. NAME (*First, middle, last*)

2. PERMANENT MAILING ADDRESS (*Street and number, City, Zone, and State*)

3. DATE OF BIRTH	HEIGHT IN.	WEIGHT	HAIR	EYES	RACE	SEX

4. ARE YOU A CITIZEN OF THE UNITED STATES ☐ YES ☐ NO IF NO, OF WHAT COUNTRY ARE YOU A CITIZEN

APPLICATION IS HEREBY MADE FOR THE FOLLOWING CERTIFICATE OR RATING(S)

☐ PRIVATE ☐ PRIVATE GLIDER ☐ FLIGHT INSTRUCTOR
☐ COMMERCIAL ☐ COMMERCIAL GLIDER ☐ INSTRUMENT
☐ AIRLINE TRANSPORT ☐ CATEGORY, CLASS, AND/OR TYPE

5. HAVE YOU PREVIOUSLY FAILED AN EXAMINATION FOR THIS CERTIFICATE WITHIN THE PAST 30 DAYS ☐ YES ☐ NO

6. WITHIN THE PAST TWO YEARS HAVE YOU HAD AN AIRMAN CERTIFICATE OR RATING DENIED, SUSPENDED, OR REVOKED ☐ YES ☐ NO (*If yes, describe on separate sheet and attach to form*)

7. LAST CAA PHYSICAL EXAM.	DATE	CLASS	NAME OF MEDICAL EXAMINER

8. ARE YOU APPLYING AS A GRADUATE OF A CERTIFICATED FLYING SCHOOL ☐ YES ☐ NO

8A. NAME OF CERTIFICATED FLYING SCHOOL

8B. DATE SHOWN ON GRADUATION CERTIFICATE

9. CAN YOU READ, WRITE, SPEAK, AND UNDERSTAND THE ENGLISH LANGUAGE ☐ YES ☐ NO

10. RECORD OF FLYING TIME

Complete this table as follows: Private Pilot, items (1) and (4); Commercial, (1), (2), (4), (5) and (6); Airline Transport, (1), (2), (3), (4), (5) and (6); Additional Aircraft Rating, (1) and (5); Flight Instructor, (1), (2) and (4); Instrument, (1), (4), and (6); Complete item (7) in all cases where applicable.

	(1) TOTAL	(2) LAST 60 DAYS	(3) LAST 6 YEARS	(4) CROSS-COUNTRY
DUAL				
CO-PILOT				
PILOT-IN-COMMAND (*Including solo*)				

	(5) NIGHT			(6) INSTRUMENT		(7) GLIDER	
	TOTAL	CROSS COUNTRY	NO. OF LANDINGS				
DUAL				ACTUAL		NO. OF FLIGHTS	
CO-PILOT				AIRCRAFT			
PILOT-IN-COMMAND (*Including solo*)				FLIGHT SIMULATOR		SOARING TIME	

11. AIRCRAFT TO BE USED (*Make and model*)

11A. CLASS (*If airplane*) ☐ SINGLE ENGINE ☐ MULTI-ENGINE ☐ LAND ☐ SEA

11B. TIME IN THIS AIRCRAFT — TOTAL — PILOT-IN-COMMAND

11C. TIME IN THIS AIRPLANE CLASS — TOTAL — PILOT-IN-COMMAND

12. I CERTIFY THAT THE STATEMENTS MADE BY ME ON THIS APPLICATION ARE TRUE.

DATE — SIGNATURE OF APPLICANT

PAGE 1 Form ACA-342A (7-52)

FIGURE 2. Form ACA–342A, Application for Pilot Certificate or Rating.

(All maneuvers to be flown with Aviation Safety Agent or Examiner)

13. This side for recording performance only; see Examiner's Handbook or MOP 4—2 for required maneuvers.

GRADING LEGEND

1. WELL ABOVE AVERAGE.....(90-100)
2. ABOVE AVERAGE.....(85-89)
3. AVERAGE.....(80-84)
4. BELOW AVERAGE.....(70-79)
5. UNSATISFACTORY.....(0-69)

PRIVATE			COMMERCIAL			FLIGHT INSTRU'R		FLIGHT MANEUVERS	AIRLINE TRANSPORT			INSTRUMENT			CATEGORY CLASS/TYPE		
INSTRUCTOR	EXAMINER	AGENT	INSTRUCTOR	EXAMINER	AGENT	INSTRUCTOR	AGENT		INSTRUCTOR	EXAMINER	AGENT	INSTRUCTOR	EXAMINER	AGENT	INSTRUCTOR	EXAMINER	AGENT
								1. FLIGHT INSTRUCTION (*Oral*)									
								2. EQUIPMENT EXAMINATION (*Oral*)									
								3. PRE-FLIGHT CHECK									
								4. TAXIING, OR SAILING AND DOCKING									
								5. RUN-UP									
								6. TAKE-OFFS									
								7. SHORT OR SOFT FIELD TAKE-OFF									
								8. SHOCK CORD, AUTO, AUTO PULLEY, OR WINCH TOW									
								9. AIRPLANE TOW									
								10. CLIMBS AND CLIMBING TURNS									
								11. 720° STEEP TURNS									
								12. MANEUVERING AT MINIMUM SPEED (*Slow flight*)									
								13. STALLS									
								14. SPINS									
								15. CHANDELLES									
								16. LAZY EIGHTS									
								17. SPIRALS (*1080° each way*)									
								18. PYLON EIGHTS, OR TURNS AROUND PYLONS									
								19. S-TURNS ACROSS A ROAD									
								20. AIRPORT TRAFFIC PATTERN (*Rectangular course*)									
								21. ACCURACY APPROACHES AND SPOT LANDINGS									
								22. LANDING TECHNIQUE									
								23. CROSS WIND TAKE-OFF AND LANDING									
								24. CROSS-COUNTRY FLIGHT PLANNING									
								25. CROSS-COUNTRY FLYING									
								26. TRAFFIC CONTROL PROCEDURES									
								27. STEEP TURNS (*Instruments only*)									
								28. TIMED TURNS									
								29. RECOVERY FROM UNUSUAL ATTITUDES									
								30. USE OF RADIO EQUIPMENT									
								31. ORIENTATION									
								32. BEAM BRACKETING									
								33. CONE IDENTIFICATION									
								34. INSTRUMENT APPROACH PROCEDURES									
								35. MISSED APPROACH PROCEDURES									
								36. USE OF DIRECTIONAL RADIO									
								37. RAPID DESCENT AND PULL UP									
								38. ENGINE(S) OUT PROCEDURE									
								39. MANEUVERING WITH ENGINE(S) OUT									
								40. MANEUVERING FOR LANDING AT WEATHER MINIMUMS									
								41. TAKE-OFF AND LANDING WITH ENGINE(S) FAILURE									
								42. EMERGENCIES									
								43. ABILITY TO INSTRUCT									
								44. SMOOTHNESS AND CO-ORDINATION									
								45. JUDGMENT									
								ADDITIONAL MANEUVERS OR REMARKS									
								FINAL GRADE (*Not an average*) %									

REGISTRATION NUMBER OF AIRCRAFT USED FOR FLIGHT TEST

PAGES 2 AND 3

FIGURE 3. Reverse of Form ACA-342A.

U. S. DEPARTMENT OF COMMERCE—CIVIL AERONAUTICS ADMINISTRATION

TEMPORARY AIRMAN CERTIFICATE

THIS CERTIFIES THAT	CERTIFICATE NO.

has been found to be properly qualified and is hereby authorized in accordance with the conditions of issuance on the reverse of this certificate to exercise the privileges of

RATINGS AND LIMITATIONS

THIS GRADE OF CERTIFICATE IS ☐ AN ORIGINAL ISSUANCE ☐ A REISSUANCE	DATE OF SUPERSEDED AIRMAN CERTIFICATE

BY DIRECTION OF THE ADMINISTRATOR		EXAM. DESIG. NO. OR AGENT'S REG. NO.
DATE OF ISSUANCE	SIGNATURE OF EXAMINER OR AGENT	*DATE DESIGNATION EXPIRES*

AIRMAN'S SIGNATURE:

16—52481-2 Form ACA-1710-T (8-52)

FIGURE 4. Form ACA–1710T, Temporary Airman Certificate.

UNITED STATES DEPARTMENT OF COMMERCE
CIVIL AERONAUTICS ADMINISTRATION

NOTICE OF DISAPPROVAL OF APPLICATION

(Result of failing to pass required examination for Certificate or Rating)

NAME AND ADDRESS OF APPLICANT	DATE

On the date indicated above you have failed to accomplish successfully the _____ (INDICATE FLIGHT, ORAL, OR PRACTICAL) portion of the examination required for the issuance of a _____ Certificate or Rating.

If a flight test, the aircraft used was a _____ (MAKE AND MODEL)

Your logbook indicates _____ hours solo; _____ hours instrument; and _____ hours dual flight time as of the date indicated above.

Upon reapplication you will be reexamined on the following items.

(Use reverse if more space is required)

This form, when signed by a designated examiner, is official notice of disapproval of your application unless within 30 days from the date hereof you request the supervising Aviation Safety Agent to examine you.

I have personally tested this applicant and deem his performance unsatisfactory for the issuance of a _____ Certificate or Rating.

_____ (SIGNATURE OF EXAMINER) _____ (DESIGNATION NUMBER)

☐ I have reviewed the above examiner's test report and accept his recommendation.

☐ I have personally tested the above applicant this date.

_____ (DATE) _____ (SIGNATURE OF AVIATION SAFETY AGENT)

U. S. GOVERNMENT PRINTING OFFICE 16—65908-1

Form ACA-666
(2-49)

FIGURE 5. Form ACA–666, Notice of Disapproval of Application.

UNITED STATES OF AMERICA
DEPARTMENT OF COMMERCE
CIVIL AERONAUTICS ADMINISTRATION

CERTIFICATE OF AUTHORITY

DESIGNATION NO.

NAME

DESIGNATION EXPIRES

DESIGNEE'S SIGNATURE

Is authorized to act in the capacity of a

AT FIXED BASE OF OPERATION

for the Administrator

(DATE) (SIGNATURE)

16—59536-2 Form ACA-1382 (6-49)

FIGURE 6. Form ACA–1382, Certificate of Authority.

The bearer has received all pertinent instructions and is authorized to act in the capacity set forth on this Certificate of Authority while under the supervision of the following district office or offices:

Office	Date	Agent's signature

U. S. GOVERNMENT PRINTING OFFICE 16—59536-1

FIGURE 7. Reverse of Form ACA–1382.

Form approved: Budget Bureau No. 41-R113.5.

U. S. DEPARTMENT OF COMMERCE
CIVIL AERONAUTICS ADMINISTRATION

PILOT EXAMINER QUALIFICATION RECORD AND FLIGHT TEST REPORT

TO BE FILLED IN BY AGENT

DATE | DESIGNATION TYPE AND NO.

ACTION TAKEN (CHECK ONE OR TWO):

- ☐ ORIGINAL DESIGNATION ISSUED
- ☐ DESIGNATION(S) RENEWED
- ☐ ADDITIONAL TYPE OF DESIGNATION ISSUED
- ☐ EXPIRED DESIGNATION REINSTATED
- ☐ SPOT CHECK ONLY—NO RENEWAL EFFECTED
- ☐ DESIGNATION (OR RENEWAL) DENIED

ATTACH SUPERSEDED CERTIFICATE OF AUTHORITY (ACA-1382)

1. NAME (*First, middle, last*)

2. ADDRESS (*Street, city, zone, State*)

3. DATE OF BIRTH	4. U. S. CITIZEN	5. CERTIFICATE NO.	6. RATINGS NOW HELD	7. DATE FLIGHT INSTRUCTOR RATING ISSUED
	☐ YES ☐ NO			

8. HAS ANY CERTIFICATE OR RATING ISSUED YOU EVER BEEN SUSPENDED OR REVOKED OR HAVE YOU PAID A CIVIL PENALTY AS THE RESULT OF A VIOLATION OF C A R

☐ YES ☐ NO IF "YES," GIVE DATE AND DETAILS

9. DO YOU NOW HOLD, OR HAVE YOU HELD, A PILOT EXAMINER DESIGNATION ☐ YES ☐ NO IF "YES," GIVE TYPE AND NUMBER

10. FLIGHT EXPERIENCE

PILOT IN COMMAND	AS INSTRUCTOR	INSTRUMENT
AS INSTRUMENT INSTRUCTOR	GLIDER (*Hours or flights*)	HELICOPTER

11. EMPLOYMENT RECORD FOR THE PAST 3 YEARS (*Including present position*)

DATES OF EMPLOYMENT	EMPLOYER (*Name and address*)	DUTIES AND TITLE

12. NAME AND LOCATION OF AIRPORT WHERE PRESENTLY LOCATED

CERTIFICATION: I CERTIFY that I am familiar with the requirements for this designation, its privileges and limitations, and that the information stated herein is true. It is understood that this designation may be revoked at any time by the CAA without prior notice, and I agree to surrender any authorization or certificate issued in connection therewith upon written request of the CAA.

(DATE) (SIGNATURE)

PROSPECTIVE EXAMINER WILL NOT FILL IN SPACES BELOW

The above pilot has been flight tested as recorded on the reverse, has been instructed in rating test maneuvers, standards, and procedures, and I deem him competent to perform the pilot examiner duties checked below:

☐ PRIVATE ☐ COMMERCIAL ☐ INSTRUMENT ☐ AIRLINE TRANSPORT PILOT

Certificate of authority dated to expire _____ Endorsed to serve under the _____ district office.

Remarks, Additional Qualifications, or Limitations:

(DATE) (AGENT'S SIGNATURE)

I have carefully considered available records and information on the above pilot and concur in the recommendation of the agent.

Region _____

(CHIEF, GENERAL SAFETY BRANCH) (CHIEF, AVIATION SAFETY DIVISION)

(DATE) (DATE)

16—53748-4 Form ACA-914 (10-52)

FIGURE 8. Form ACA-914, Pilot Examiner Qualification Record and Flight Test Report.

PILOT EXAMINER FLIGHT TEST REPORT

AIRPLANE MAKE

MODEL

FLIGHT MANEUVERS	PRIVATE	COMMERCIAL	INSTRUMENT	AIRLINE TRANSPORT
1. Flight instruction (oral)				
2. Equipment examination (oral)				
3. Preflight check				
4. Taxiing, or sailing and docking				
5. Run-up				
6. Take-offs				
7. Short or soft field take-off				
8. Shock cord, auto, auto pulley, or winch tow				
9. Airplane tow				
10. Climbs and climbing turns				
11. 720° steep turns				
12. Maneuvering at minimum speed (slow flight)				
13. Stalls				
14. Spins				
15. Chandelles				
16. Lazy eights				
17. Spirals (1,080° each way)				
18. Pylon eights, or turns around pylons				
19. S-turns across a road				
20. Airport traffic pattern—rectangular course				
21. Accuracy approaches and spot landings				
22. Landing technique				
23. Cross-wind take-off and landing				
24. Cross-country flight planning				
25. Cross-country flying				
26. Traffic-control procedures				
27. Steep turns (instruments only)				
28. Timed turns				
29. Recovery from unusual attitudes				
30. Use of radio equipment				
31. Orientation				
32. Beam bracketing				
33. Cone identification				
34. Instrument approach procedures				
35. Missed approach procedures				
36. Use of directional radio				
37. Rapid descent and pull-up				
38. Engine(s) out procedure				
39. Maneuvering with engine(s) out				
40. Maneuvering for landing at weather minimums				
41. Take-off and landing with engine(s) failure				
42. Emergencies				
43. Ability to instruct				
44. Smoothness and coordination				
45. Judgment				
FINAL GRADES (Percent)				

The agent will require the prospective examiner to *demonstrate, and evaluate and grade, sufficient* maneuvers in the appropriate column to assure himself that the pilot is qualified for the examiner designation in question.

1. Well above average.... (90–100)
2. Above average..... (85–89)
3. Average..... (80–84)
4. Below average..... (70–79)
5. Unsatisfactory..... (0–69)

FLIGHT TEST ACTIVITY REPORT

The agent will complete this portion when renewal or additional designation is issued.

NUMBER OF FLIGHT TEST FILES FROM THIS EXAMINER CLEARED BY SUPERVISING DISTRICT OFFICE SINCE LAST REPORT. LAST REPORT WAS SUBMITTED:

	TOTAL SUBMITTED	DISAPPROVED BY EXAMINER	ACCEPTED BY AGENT	RECHECKED BY AGENT	NUMBER RETURNED FOR CORRECTION
Private Pilot Certificate					
Commercial Pilot Certificate					
Airline Transport Pilot Certificate					
Instrument Rating					
Additional Aircraft Rating—Private					
Additional Aircraft Rating—Commercial					
Additional Aircraft Rating A.T.P. (Inc. 6-Mo. Checks)					

I have personally tested the pilot listed on the reverse on the maneuvers graded.

(DATE)

(AGENT'S SIGNATURE)

U. S. GOVERNMENT PRINTING OFFICE 16—58744-4

Form ACA-914 (10-52)

FIGURE 9. Reverse of Form ACA–914.

U. S. GOVERNMENT PRINTING OFFICE: 1956 O—404270