CIVIL AERONAUTICS BOARD

WASHINGTON, D. C.

CIVIL AIR REGULATIONS

PART 21—AIRLINE TRANSPORT PILOT RATING

As amended to October 1, 1942

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1942

For sale by the Superintendent of Documents, Washington, D. C. - - - - - - - - - - - Price 5 cents

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21.0 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 following regulations.

21.1 Minimum requirements. To be eligible for an airline transport pilot competency rating, an applicant shall comply with the following minimum requirements:

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. Applicant shall be:

(a) A citizen of and of unquestionable loyalty to the United States, or

(b) A person who is in sympathy with the objectives of the United States and who is a trustworthy citizen of a friendly foreign government not under the domination of or associated with any government with which the United States is at war and which government grants reciprocal commercial pilot privileges to citizens of the United States on equal terms and conditions with citizens of such foreign government.

21.13 Education.

21.130 (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

21.131 (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.

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

21.1500 (a) The provisions of Parts 01, 21, 27, 40, 60, 61, and 98, together with such Parts of the provisions of Part 04 as are pertinent to the operations of air carrier aircraft.

21.1501 (b) The fundamentals of air navigation and the use of formulae 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.

21.1502 (c) The general system of weather collection and dissemination.

21.1503 (d) Weather map, weather forecast, and weather sequence abbreviations, symbols, and nomenclature.

21.1504 (e) Elementary meteorology, including modern knowledge of the cyclone as associated with fronts.

21.1505 (f) Cloud forms.

21.1506 (g) Department of Agriculture Weather Bureau Circular "N", Instructions for Airway Meteorological Service, and all amendments thereto.

21.1507 (h) Weather conditions, including icing conditions and upper-air winds, affecting aeronautical activities.

21.1508 (i) Air navigation facilities in use on the civil airways, including rotating beacons, course lights, radio ranges, and radio marker beacons.

21.1509 (j) Data obtained from airplane weather observations and meteorological data reported from observations made by pilots engaged in air carrier flights.

21.1510 (k) The influence of terrain upon meteorological conditions and developments, and the relation thereof to air carrier flight operations.

21.16 Aeronautical experience. Applicant shall comply with the following requirements:

21.160 (a) Applicant shall be possessed of a valid commercial pilot rating, or equivalent as determined by the Administrator.

21.161 (b) Applicant shall have logged at least 1,200 hours of certified solo flying time within the last 8 years, of which at least 500 hours shall have been in cross-country flight, and of which at least 5 hours of solo flying time shall have been logged within the 60 days last preceding the date of filing the application.

21.162 (c) Applicant shall have logged at least 100 hours of night flying in control of an airplane of which at least 50 hours shall have been cross-country; or at least 150 hours in control of airplanes in scheduled air carrier operations and, within the year preceding application, shall have made at least 10 take-offs and 10 landings at night.

21.163 (d) Applicant shall have had at least 20 hours of instrument flying instruction and practice. In lieu of not to exceed 10 hours of the foregoing 20-hour requirement applicant may show an equal or greater amount of instruction and practice under simulated conditions approved by the Administrator.

21.17 Aeronautical skill. Applicant shall demonstrate satisfactorily his ability to pilot aircraft in solo flight in normal take-offs, turns, landings, and the following maneuvers (the maneuvers in §§ 21.175 and 21.176 shall be performed in an aircraft satisfactory to the examining inspector of the Administrator).

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

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

21.172 (c) A series of 3 shallow and 3 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.

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

21.174 (e) §§ 21.170 through 21.173 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 § 20.147.

21.175 (f) Emergency maneuvers such as simulated forced landings, spirals, side slips and climbing turns, and recovery from stalls, maneuvers in multi-engine 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.

21.176 (g) 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 §§ 21.170 through 21.176 and of § 21.179 may be met by the holding of a valid commercial rating.

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

21.1770 (a) Straight level flight for a given period of time.

21.1771 (b) Modern banks during 180° and 360° turns in both directions.

21.1772 (c) Minimum glides and maximum climbs, and approaches to stalled attitudes of flight.

21.1773 (d) Climbing turns.

21.1774 (e) Stalls, skids, slips and spirals, and banks in excess of 45°, and recovery from the same.

21.1775 (f) Such other maneuvers as the examining inspector deems necessary.

21.1776 (g) A practical demonstration, while in flight or under simulated conditions, of estimating arrival time, taking into account speed, wind, and drift.

NOTE.—The requirements of §§ 21.1770 through 21.1774 may be met by the holding of a valid instrument rating

21.178 Radio skill. Applicant shall accomplish a satisfactory flight test, in a hooded cockpit, with respect to the following:

21.1780 (a) Tuning radio.

21.1781 (b) Orientation. Effective January 1, 1939, such orientation shall include the use of the radio direction finder with sufficient tests to determine the ability of the pilot to:

(1) home on a radio station

(2) determine whether the aircraft is heading toward or away from the station

(3) obtain accurate fixes by the use of radio compass.

21.1782 (c) Following radio range.

21.1783 (d) Locating cone of silence.

21.1784 (e) Letting-down-through on the range by the approved instrument approach procedure for the particular airport used in connection with the test.

21.1785 (f) Such other maneuvers as the examining inspector deems necessary.

21.179 Such maneuvers as are necessary to demonstrate competence to satisfactorily pilot an aircraft from either control seat. None of the maneuvers provided for in § 21.17 shall be disregarded, but any such maneuvers 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.

21.2 Airline transport pilot competency certificate.

21.20 Existing aircraft ratings. Every airline transport pilot having a type, weight, and engine classification rating shall continue to operate aircraft in accordance with the limitations of such rating until the expiration, suspension, or revocation of the certificate, or until an aircraft type and, in the case of an airplane, an airplane class and horsepower rating are prescribed on his airline transport pilot certificate.

21.200 Aircraft rating. The aircraft which the applicant is deemed competent to pilot will be prescribed on his certificate by type and, in the case of an airplane, by airplane class and horsepower and, in the case of unconventional airplanes, such description as is appropriate to define clearly the competence of the applicant. Competence to pilot aircraft in solo flight shall be demonstrated in aircraft of the type and, in the case of an airplane, the airplane class and horsepower range for which rating is sought. A person holding a currently effective pilot certificate on August 1, 1941, may be rated without further test to fly (a) aircraft of a type in

which he has logged the solo hours specified for renewal of an airline transport pilot certificate, and (b) airplanes of a class and a horsepower range determined on the basis of the class and specific horsepower of airplanes in which he has logged at least 5 hours of solo flight time within the 6 months immediately preceding expiration of his certificate and for which he holds a currently effective weight and engine classification rating.*

*NOTE.—For example, an airline transport pilot who is rated to fly 4M land airplanes and who has logged at least 5 hours in one or more such airplanes of 2,000 hp may be rated to fly multi-engine land airplanes of from 50 percent less, or 1,000 hp to 50 percent greater or 3,000 hp.

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

21.210 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.

21.211 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 one year after the revocation, except as the order of revocation may otherwise provide.

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.

21.220 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.

21.221 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 § 20.4 and upon the same terms as such rating is issued to and renewed for the holder of a valid commercial pilot certificate.

21.222 Instruction in air transportation service. Any person holding a valid airline transport pilot certificate shall be considered competent to instruct other pilots in air transportation service in aircraft of a type, and, in the case of an airplane, the airplane class and horsepower specified in the airline transport pilot certificate of the instructing pilot, *provided, however,* such instruction shall be subject to the prohibitions provided for in § 20.8.

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. An airline transport pilot certificate shall be of 60 days' duration and, unless the holder thereof is otherwise notified by the Administrator within such period, it shall continue in effect thereafter, until otherwise specified by the Board, unless suspended or revoked.

21.25 Expired certificates: special issuance. The holder of an airline transport pilot certificate which has expired within the preceding 12 months, upon application, may obtain a new airline transport pilot certificate and aircraft rating to pilot aircraft of the same type and with the same special rating theretofore held immediately prior to its expiration, by demonstrating to the satisfaction of the Administrator that he is qualified to hold the certificate and rating sought.

21.253 Reinstatement. In the event of an emergency which prevents renewal prior to expiration, and upon a showing thereof satisfactory to the Administrator, the applicant may have his airline transport pilot certificate validated in accordance with the provisions for renewal in § 21.25, provided the flight tests appropriate to the rating are again satisfactorily accomplished. The date of application for reinstatement rather than the expiration date of the certificate shall be controlling in applying § 21.25. There shall be but one application for reinstatement following a given lapse.

21.26 Non-Transferability. An airline transport pilot certificate is not transferable.

21.27 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 physical requirements with which he complied in order to secure his certificate.

21.28 Surrender. Upon the suspension, revocation, or expiration of an airline transport pilot certificate, the holder of such certificate shall, upon request, surrender such certificate to any officer or employee of the Administrator.

21.29 Reapplication. An applicant for an airline transport pilot certificate who has failed to successfully accomplish any prescribed test for such rating may apply for reexamination thereon after the expiration of 90 days from the date of such failure, provided he shows at least 10 additional hours of certified solo flying time logged by him, which shall include at least 5 hours of flying solely by instruments.

21.3 Examinations and tests.

21.30 General. The examinations and tests prescribed in these regulations (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.

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

(*a*) Airplane;
(*b*) Autogiro;
(*c*) Glider;
(*d*) Lighter-than-air aircraft.

21.35 Airplane class and horsepower rating.

21.350 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:

(*a*) Single-engine, land;
(*b*) Single-engine, sea;
(*c*) Multi-engine, land;
(*d*) Multi-engine, sea;
(*e*) Unconventional.

21.351 Horsepower rating. For purposes of specifying the horsepower of airplanes which the applicant is deemed competent to pilot and for convenience in examining and rating the applicant with respect thereto, pilots are rated as follows:

(*a*) A certificated airline transport pilot shall be rated to fly airplanes of 80 or less horsepower if competence* has been demonstrated in airplanes certificated for a maximum, except take-off, of 80 or less horsepower.

(*b*) Except where subsection (a) hereof is applicable, a certificated airline transport pilot shall be rated to fly airplanes of a range of horsepower extending from 50 percent less to 50 percent greater than the total maximum, except take-off, horsepower for which the airplanes in which competency* was demonstrated were certificated.

*NOTE.—Competence may be demonstrated either by (1) a flight test or (2) by logging the solo flight time required for rating prescribed in § 21.200.

(*c*) A certificated airline transport pilot eligible for 2 or more horsepower range ratings shall be rated for one continuous range extending from the lowest to the highest horsepower for which he has qualified.

21.352 Multiple airplane class and horsepower ratings. The horsepower rating shall apply to all airplane class ratings without the necessity of a separate flight test in each combination of such class and horsepower ratings. An applicant who has demonstrated competence in both single and multi-engine airplanes and in both land and sea airplanes may be rated for all airplane classes* except unconventional.

*NOTE.—For example, a pilot may be rated under § 21.350 for single engine land airplanes and under § 21.351 (b) from 100 to 900 hp by reason of flight tests in landplanes of 200 hp and 600 hp. If he subsequently passes a rating flight test in a multi-engine seaplane of 4,000 hp, he will be rated under § 21.350 for *single or multi-engine land or sea* airplanes, and therefore will be eligible to fly single or multi-engine land or sea airplanes of 100 to 6,000 horsepower.

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 tests will be considered as of a confidential nature by such person and by all employees of the Civil Aeronautics Authority.

21.4 Pilot regulations.

21.40 Certificated airline transport pilots. 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 airline transport pilot certificate may pilot airplanes

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

(*b*) 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.

21.400 Periodic physical examinations. A certificated airline transport pilot shall not pilot an aircraft in flight 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: *Provided*, That the holder of an airline transport pilot certificate may, in lieu of each alternate periodic physical examination by such medical examiner of the Administrator, submit evidence satisfactory to the Administrator that he has within the preceding 15 days met at least the physical requirements prescribed in this Part by passing a physical examination prescribed by the air carrier by which he is employed.

21.401 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.

21.41 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 take-offs, and 3 landings to a full stop, in an aircraft of the same type (§ 21.34) and if an airplane, within the same class (§ 21.350) as that of the aircraft in which any such person is carried.

21.42 Recent experience requirements.

21.421 Without passengers. A certificated airline transport pilot who within the preceding 6 calendar months has not made and logged at least 3 take-offs and 3 landings to a full stop in aircraft of the type and class to be flown, shall not pilot such aircraft until he has made 3 take-offs and 3 landings to a full stop therein, accompanied by a certificated pilot of at least private grade holding an appropriate type, class, and horsepower rating.

21.422 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 furtherance of their official duties, or a certificated instructor rated for the aircraft operated, unless within the preceding 3 calendar months he shall have made and logged at least 3 take-offs and landings to a full stop in an aircraft of the same type and class as that of the aircraft in which such person is carried. A certificated airline transport pilot shall not pilot such aircraft between sunset and sunrise unless he has made at least one of the 3 required take-offs and landings between sunset and sunrise.

21.423 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 type, class, and horsepower 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 § 21.222, unless possessed of a valid instructor rating or unless such instruction is given subject to the prohibitions of § 20.8.

21.44 Log-books. The following rules will govern pilot log-books:

21.440 General. Every certificated airline transport pilot shall keep an accurate record of his flying time in a log-book 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. Log-books 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.

21.441 Contents. The log-book shall contain the date of flight, the make and model of aircraft flown, its type and, in the case of an airplane, its airplane class and horsepower, the aircraft certificate number, a statement of solo, dual instruction, instrument and night flying time, the duration of the flight, and 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. Flying instruction time shall be logged in the same manner and, in addition, the instructor shall make complete entries in the log-book 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 log-book 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.

21.442 Logging of pilot flight time. The holder of an airline transport pilot certificate may log as solo flight time that portion of any flight during which he is the sole manipulator of the controls or during which he is serving as an instructor in accordance with § 21.222: *Provided,* That he may log only 50 percent of any flight time during which a certificated instructor or a certificated airline transport pilot is in the aircraft serving as an instructor for the purpose of reviewing or increasing such pilot's skill; and *Provided further,* That the holder of an airline transport pilot certificate while serving in scheduled air transportation shall log his flight time as provided in Part 61.

21.443 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.)

21.444 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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