Appendix A

Aircraft Type Ratings

This appendix contains the type ratings which the holder of a pilot certificate may be issued upon meeting the flight test standards applicable thereto.

Aircraft Type Ratings Issued

I. CIVIL AIRCRAFT*

Manufacturer	Model Designations	Certificate Type Ratings
[Armstrong-Whitworth	AW 650 Argosy	Armstrong-Whitworth AW 650]
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
	YC-97	Boeing YC-97
	Boeing 707, [VC-137]	Boeing [707/720]
[Canadair Limited	Canadair CL-44 D4	Canadair CL-44 D4]
Chase	YC-122	Chase YC-122
Consolidated Vultee	28-4, 28-5ACF, PBY-5, OA-10, PBY-5A, OA-10A.	Consolidated Vultee PBY
	Convair 240, 340, 440, T-29, C-131, R4Y	Convair 240-340-440
	Convair 880	Convair 880
	[Convair 340/440 Napier Eland Mark I or Mark II.	Napier Eland Convair Mark I/II
	[Allison Prop Jet Convair 340/440	Allison Convair 340/440]
Curtiss-Wright	C-46A, D, E, F	Curtiss-Wright C-46
Douglas	DC-3, C-47, C-48, C-49, C-50, C-51, C-52, C-53, C-68, R4D-1-2-3-4-5-6.	Douglas DC-3
	Super DC-3, R4D-8, R4D-Z	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, C-34, C39, C42, R2D-1.	Douglas DC-2
	DC-8	Douglas DC-8
	B-18	Douglas B-18
	B-23, UC-67	Douglas B-23
Fairchild	F-27 Friendship	Fairchild F-27
Ford	4AT-B, 4-AT-E, 5AT-B, 5AT-C, 5AT	Ford 5
Grumman	G-73 or Mallard	Grumman G-73
	SA-16 or Albatross	Grumman SA-16
	G-159 Gulfstream	Grumman G-159
Lockheed	14N	Lockheed 14
	49, 049, 149, 649, 649A, 749, [1049-B-C-D-E, F, G, H,] 1649, C-69, C-121, R7V-1.	Lockheed Constellation
	18, C57, C59, C60, R50	Lockheed 18
	188 Series (Electra)	Lockheed 188
	Jetstar	Lockheed Jetstar
Martin	202, 202A, 404	Martin 202-404
North American	Sabreliner (USAF UTX)	North American Sabreliner
Sikorsky	S-43, S-43W	Sikorsky S-43
	S-58A, S-58B, S-58C	Sikorsky S-58
	VS44A	Sikorsky VS-44
[Sud Aviation	SE 210 Caravelle	Sud 210 Caravelle]
Vertol	Model 42, Model 44	Vertol 44
Vickers	700 or 800 Series	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 identifications; 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 those listed 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 FAA for civilian use.

V. Type ratings may be issued for aircraft listed above if a provisional airworthiness certificate has been issued for the airplane.

Appendix B

SPECIAL CIVIL AIR REGULATION NO. SR-434A

Effective: Sept. 9, 1961
Adopted: Sept. 5, 1961
Published: Sept. 9, 1961
(26 F.R. 8484)

Elimination of Requirement for 100-Mile Solo Flight Experience for Issuance of Private Pilot Certificate on Island of Okinawa

Section 20.34(c) of the Civil Air Regulations presently provides that the aeronautical experience necessary for issuance of a private pilot certificate shall include 10 hours of solo cross-country flight time, at least one flight of which shall include a landing at a point more than 100 miles from the point of departure. The Naha Air Base Aero Club, a flying club composed of U.S. civil and military personnel located at the Sukiran Army Air Field on Okinawa and sponsored by the United States Air Force, was granted, on July 9, 1959, an exemption from the requirements of section 20.34(c) because the island is not large enough to permit the required 100-mile flight. The Naha Club has requested that the exemption granted in Special Civil Air Regulation No. SR-434 which expired on June 30, 1961, be renewed for an indefinite period.

Okinawa is some 60 miles long and from 2 to 22 miles wide. The maximum distance between airports on the island is some 40 miles. Landings more than 100 miles from a point of departure on Okinawa may be made on other islands in the area, but such other islands are not equipped with adequate landing areas and flights to such landing areas would expose pilot trainees to the unnecessary hazard of overwater operations.

The purpose of the requirement for a 100-mile solo cross-country flight is to develop the necessary skills in navigation from maps and unfamiliar visual landmarks. The experience to be gained from a 100-mile cross-country flight would not be of any special value or assistance to a private pilot flying on Okinawa over that to be gained from a 40-mile cross-country flight on Okinawa. It appears that such a 40-mile flight as part of the 10 hours of solo cross-country flight time required by section 20.34(c) would so familiarize a pilot with the landmarks and terrain of the area in which he would be flying as to constitute an adequate standard of safety for issuance of a pivate pilot certificate for the island of Okinawa. A pilot holding such a certificate who may wish to obtain a certificate without limitation to Okinawa would still be required to comply with the experience requirement for the 100-mile solo cross-country flight prescribed by section 20.34(c).

Accordingly, Special Civil Air Regulation No. SR–434 was issued to permit such pilots to obtain a limited private pilot certificate without compliance with the 100-mile solo cross-country flight requirement of section 20.34(c). The conditions under which SR–434 was issued have not changed and since this regulation imposes no additional burden on any person, relieves a restriction, and constitutes a grant of exemption, compliance with the notice, public participation, and effective date provisions of section 4 of the Administrative Procedure Act is unnecessary.

In consideration of the foregoing, the following Special Civil Air Regulation is hereby promulgated to become effective September 9, 1961:

1. The provision of section 20.34(c) of Part 20 of the Civil Air Regulations with respect to a 100-mile solo cross-country flight shall not apply to the issuance of a private pilot certificate to an applicant who demonstrates on the island of Okinawa, Ryukyu Islands, that he is otherwise eligible for issuance of such certificate and who has completed a solo cross-country flight between those airports on Okinawa which are the farthest apart. A pilot certificate issued pursuant to this regulation shall contain the following limitation:

> "The holder shall not pilot any aircraft carrying passengers except on flights over the island of Okinawa and within a radius of 40 miles from the airport of take-off."

2. The holder of a private pilot certificate issued subject to the limitations provided in paragraph 1 of this regulation may obtain a private pilot certificate without such limitation upon presentation to an inspector of the Federal Aviation Agency of satisfactory evidence of compliance with the 100-mile solo flight experience requirement of section 20.34(c) and after satisfactorily accomplishing a practical examination with respect to the procedures and maneuvers prescribed by section 20.35(b).

This special regulation renews the provisions contained in Special Civil Air Regulation No. SR–434, which expired on June 30, 1961, and shall continue in effect until superseded or revoked.

primary dual instruction and is not to be given as a separate block of instrument flight instruction. Emphasis given in the instrument training shall be toward development of a better trained and more proficient pilot by providing additional tools and teaching their proper use. Many persons opposed this requirement based on the erroneous opinion that each aircraft utilized would require the same full instrumentation necessary for IFR operations prescribed by Part 43 of the Civil Air Regulations. An artificial horizon is desirable; however, for the purpose of providing this instruction, the only required additional instruments over those prescribed for VFR operations by Part 43 is a turn and bank indicator and sensitive altimeter. The turn indicator may be driven electrically or by vacuum derived from a motor-driven or venturi installation. The extended visor cap is recommended as a means of simulating instrument flight conditions. This method permits the flight instructor to better observe and avoid other traffic.

Section 20.44(d) presently provides for 10 hours of instrument flight experience for the commercial pilot applicant but only as an alternative to not having his certificate endorsed to state that fact. This amendment eliminates this provision and makes the 10 hours of instrument flight experience a required standard for the issuance of a commercial pilot certificate. Provision is made for the reissuance of a certificate without endorsement to the holder of a currently endorsed certificate upon showing evidence of having met the instrument flight experience requirements of this amendment. Since there are no operating restrictions issued in connection with the endorsement, it is meaningless except that a certificate so endorsed may not be valid for use in foreign countries because it does not meet the commercial pilot standards prescribed by Annex I of the International Civil Aviation Organization (ICAO). Adoption of this amendment will permit the United States to notify ICAO that our certification standards for the commercial pilot meet this international standard.

The principal reason for the adoption of the 10 hours of flight experience and demonstration of skill stems from the fact a commercial pilot has the privilege of piloting aircraft for hire. During cross-country flight he may encounter unanticipated adverse weather conditions, particularly at night, and he should be able to control the attitude of the airplane by reference to instruments and to cope with reduced visibility conditions in piloting the airplane out of such areas. Therefore, 10 hours of instrument flight experience and a demonstration of ability to control an airplane in flight solely by reference to instruments is being required for the commercial pilot applicant.

It should be clearly understood that the instrument training and demonstration of basic instrument flight capability required by this amendment for private and commercial pilot applicants convey no instrument flying privileges. To engage in instrument operations, the pilot must hold an instrument rating and the airplane must be equipped for IFR operations as prescribed by Part 43 of the Civil Air Regulations.

The changes included in this amendment constitute part of our safety program designed to improve the competence of the student, private, and commercial pilot. Additional revisions of the Civil Air Regulations to further implement this safety program are under consideration and if adoption is found desirable, will be circulated for industry comment. It is to be noted

the amendments herewith adopted will come into effect 4 months after the adoption date. This period has been provided to permit pilots now in training ample opportunity to be certificated under the present requirements if desired.

In consideration of the foregoing, and since the changes included in this amendment substantively agree with those published as a notice of proposed rule making in the Federal Register (23 F.R. 1014), Part 20 of the Civil Air Regulations (14 CFR Part 20) is hereby amended as follows, effective March 16, 1960:

1. By amending section 20.24(b) to read as follows:

20.24 Flight area limitations. * * *

(b) He has received dual instruction in:

(1) Crosswind and simulated soft-field takeoffs and landings;

(2) Climbing and gliding turns at minimum safe speeds;

(3) Cross-country navigation by reference to aeronautical charts;

(4) Safe operating procedures in simulated emergencies such as engine failure, loss of flying speed, marginal visibility, deteriorating weather, getting lost, and similar critical situations;

(5) Conforming with air traffic control instructions by radio and lights; and

(6) The proper use of two-way radio communications, VFR navigation procedures and techniques: *Provided,* That in areas where ground electronic communication equipment and navigational aids are not available within 100 miles of the base of operation, a synthetic trainer may be used for training in air traffic procedures, phraseology, and radio navigation; and

2. By amending section 20.33(b) to read as follows:

20.33 Aeronautical knowledge. * * *

(b) The practical aspects of cross-country flying, including flight planning, map reading, pilotage, radio communication procedures, radio navigation, and emergency procedures;

3. By amending section 20.34 by redesignating the present paragraph (d) as paragraph (e), and by inserting a new paragraph (d) to read as follows:

20.34 Aeronautical experience. * * *

(d) Dual instruction in the control of an airplane solely by reference to instruments, given by the holder of a flight instructor certificate with an airplane rating. The airplane shall be equipped with at least a sensitive altimeter, turn and bank indicator, and a means for simulating instrument flight conditions. This instruction by reference to instruments shall be integrated with the dual flight instruction in primary flight maneuvers given before and after solo; and

4. By amending section 20.35(b) to read as follows:

20.35 Aeronautical skill. * * *

(b) Planning of a VFR cross-country flight to a specified destination, reckoning with weather conditions, fuel requirements, check points, estimated time of arrival, available alternate airports, radio communication and navigation procedures, air traffic control procedures, and accomplishing such portion of the planned flight, including change of course to an alternate airport, and execution of emergency procedures, as are necessary to demonstrate proficiency in cross-country flying.

5. By amending section 20.35 by inserting a new paragraph (g) to read as follows:

20.35 Aeronautical skill. * * *

(g) Demonstrate in simulated instrument flight to an FAA Inspector or a designated flight examiner with an instrument rating ability to safely control an aircraft manually by sole reference to the aircraft flight instruments. This demonstration shall include manual control in the following:

(1) Recovery from the start of a power-on spiral;

(2) Recovery from the approach to a climbing stall;

(3) Normal turns of 180° duration left and right to within ±20° of proper 180° heading;

(4) Shallow climbing turns to a predetermined altitude;

(5) Shallow descending turns at reduced power to a predetermined altitude; and

(6) Straight and level flight.

Note: The basic criteria for a satisfactory demonstration shall be safe and positive manual control, not precision in speed, altitude, and direction control. Nevertheless, unsafe or unsure control of airspeed, erratic loss or gain of altitude or consistent failure to maintain the general direction of flight shall be disqualifying. The intent of this added aeronautical experience and skill is basically as follows: This student or applicant has just flown suddenly into worsening weather conditions which make further control of the aircraft by visual reference to the ground unsafe or unlikely. He allows the aircraft to assume an attitude that, if continued, would result in a probable uncontrollable maneuver. Can he recover from this position safely and then turn back in the proper direction where known pilotage weather conditions exist, while at the same time adjusting and maintaining altitude control that will clear safely terrain and other obstructions. If he can do this consistently, with positive and safe control, he is a much safer private pilot. It is important, however, that all through the course of instruction, the student has stressed to him the danger of operating into weather flight conditions described above and that this minimum ability can be fatal if proper respect is not maintained by him.

6. By amending section 20.43 (a) and (b) to read as follows:

20.43 Aeronautical knowledge. * * *

(a) Meteorology, including recognition of basic weather conditions and trends, and the acquisition and use of weather information disseminated by the U.S. Weather Bureau such as hourly sequence reports, terminal forecasts, winds aloft reports, and reading and interpreting weather maps;

(b) Navigation, including pilotage, dead reckoning, the use of instruments and radio aids to navigation, proper radio frequency utilization, radiotelephone procedures and techniques, flight planning, emergency procedures, preflight and inflight services for pilots, and notices to airmen;

7. By amending section 20.44 (b), (c), and (d) to read as follows:

20.44 Aeronautical experience. * * *

(b) 100 hours as pilot in command, including:

(1) 50 hours of cross-country, each flight including a landing more than 25 miles from the point of departure;

(2) Takeoffs and landings from at least two different airports in accordance with two-way radio instructions from an airport traffic control tower; and

(3) One cross-country flight of at least 350 miles, including landings at 3 points, one of which must be not less than 150 miles from the point of departure;

(c) 10 hours of dual instruction in airplanes in preparation for the commercial pilot flight test. Such dual instruction shall have been acquired within the 6 months preceding the commercial pilot flight test; and

(d) 10 hours of instruction in the operation of an airplane in flight solely by reference to instruments, which shall include not less than 5 hours of dual instrument instruction, given by a rated instrument flight instructor. The remaining 5 hours may be given by the holder of a flight instructor certificate with an airplane rating.

Note: The holder of a commercial pilot certificate bearing an endorsement that he did not meet the required 10 hours of instrument flight experience may have such endorsement removed upon presentation of reliable documentary evidence showing that he has met the 10 hours of required flight instruction and has successfully accomplished the skill test required by section 20.45(e).

8. By amending section 20.45 by inserting three new paragraphs (e), (f), and (g) to read as follows:

20.45 Aeronautical skill. * * *

(e) Demonstrate in simulated instrument flight to an FAA Inspector or a designated flight examiner with an instrument rating ability to safely control an aircraft manually by sole reference to the aircraft flight instruments. This demonstration shall include manual control in the following:

(1) Recovery from a well-developed power-on moderate turn spiral in a medium banked attitude.

(2) Recovery from a high-angle climb in a turn.

Note: High-angle climb is one that if allowed to continue another 30 seconds at cruising power would result in stalling the aircraft.

(3) Standard rate turns of 180° and 360° duration to within ±10° and ±20°, respectively, of proper heading, and within ±150 feet of altitude.

(4) Maximum safe performance climbing turns of 180° duration followed by continued straight climb to predetermined altitude requiring not less than one minute straight climb performed within ±10 knots of airspeed and ±10° of proper heading.

(5) Two consecutive descending 90° turns using normal approach power for reducing altitude performed within ±10 knots of airspeed and ±10° of proper heading. At completion of first 90° turn continue straight descent for 1 minute. Complete second 90° descending turn and continue straight descent for 1½ minutes.

Note: This maneuver can be used to simulate a safe but not precise low approach (1,000 feet) to an airport, with the instructor acting as radar advisory control.

(6) Straight and level flight performed within ±10° of proper heading, 100 feet of altitude and 10 knots of airspeed.

Note: Safe and positive manual control, not precision, is the basic criteria for a satisfactory demonstration but the commercial pilot applicant must maintain control of the aircraft within the prescribed limits of heading, altitude, and airspeed.

(f) Planning a cross-country flight to a specified destination reckoning with weather conditions and forecasts, winds aloft information, airport and radio navigational facilities; pertinent aircraft characteristics, range, and performance; and use of appropriate charts.

(g) Cross-country flying using pilotage, dead reckoning, and radio aids for navigation, including change of course to an alternate airport, coping with simulated in-flight emergencies, and the use of radio for two-way communications with appropriate ground radio facilities.

9. *By adding a note at the end of sections 20.35 and 20.45 to read as follows:*

Note: Detailed information on present flight test procedures and standards are contained in Flight Operation and Airworthiness Release No. 420. Revision of the information in this release will be issued as FAA Bureau of Flight Standards Flight Test Guides and will contain appropriate supplemental information concerning the maneuvers required by these amendments. These flight test guides may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.

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upon compliance with the requirements of this part for such ratings.

(3) Instrument ratings will not be issued in connection with Special Purpose Pilot Certificates.

(b) *Examination.* The examination on air traffic rules may be written or oral, at the discretion of the inspector accepting the application.

(c) *Physical standards.* The applicant will present evidence of currently meeting the physical requirements of his own country, or may present a current FAA Medical Certificate of a grade appropriate to the certificate sought.

(d) *Limitations.*

(1) Each such pilot certificate will bear a notation showing the basis on which it is issued, and will be limited to the specific purpose for which it is issued. Examples of such purposes are: Ferry flights of new aircraft for export, the operation of U. S. registered aircraft in foreign countries, and flights for the maintenance of proficiency in the United States. Requests for such certificates for other specific purposes will be forwarded to Washington for an individual determination.

(2) A certificate issued to a foreign pilot who is unable to read, speak, and understand the English language will bear such additional limitations as the issuing inspector deems necessary for safety.

(Published in 22 F. R. 5539, July 13, 1957, effective Aug. 1, 1957.)

Subpart F—Aircraft and Instrument Ratings

Aircraft Ratings

20.120 *Aircraft ratings.* Aircraft ratings issued to private and commercial pilots shall be classified as follows:

(a) *Category ratings.*

(1) Airplane.

(2) Rotorcraft.

(3) Glider.

(b) *Airplane class ratings.*

(1) Single-engine land.

(2) Multiengine land.

(3) Single-engine sea.

(4) Multiengine sea.

(c) *Type ratings.* Each type of aircraft having a maximum certificated take-off weight of more than 12,500 pounds.

20.120–1 *Helicopter category ratings (FAA interpretations which apply to sec. 20.120 (a) (2)).* A helicopter rating entered on a pilot certificate prior to September 1, 1957, will be accepted as the equivalent of the rotorcraft rating established by section 20.120 (a) (2).

(Published in 22 F.R. 5539, July 13, 1957, effective Aug. 1, 1957.)

20.120–2 *Class ratings on multi-jet airplanes with engines in fuselage (FAA policies which apply to sec. 20.120 (b)).* An airplane with multiple jet engines in the fuselage or wing roots will be considered as an AIRPLANE SINGLE-ENGINE LAND (or SEA) for the purpose of issuing aircraft ratings under section 20.120, because the failure of one such engine does not require the application of multiengine flight control techniques to maintain control of the airplane.

(Published in 23 F.R. 2244, Apr. 5, 1958, effective Apr. 30, 1958.)

20.121 *Additional aircraft ratings.* An applicant for an additional aircraft rating subsequent to the original issuance of a private or commercial pilot certificate shall meet the following requirements:

(a) *Category rating.*

(1) A pilot holding an airplane category rating who applies for a rotorcraft category rating shall have acquired at least 25 hours of dual instruction and solo flight time in rotorcraft, 5 of which shall have been solo, and shall pass an appropriate flight test.

(2) A pilot holding an airplane or rotorcraft category rating who applies for a glider category rating shall have acquired at least 2 hours of dual instruction and solo flight time in gliders which shall include at least 10 solo glider flights in which 360° right and left approaches have been made, and shall pass an appropriate flight test.

(3) A pilot holding a glider category rating who applies for an airplane or rotorcraft rating shall meet all the requirements for the original issuance of such category rating and shall pass an appropriate flight test.

(4) A pilot holding a rotorcraft category rating who applies for an airplane category rating shall have acquired the total flight time required for the original issuance of such category rating, shall have acquired at least 5 hours of solo flight time in airplanes, and shall pass an appropriate flight test.

(b) *Class or type rating.* An applicant for an additional class or type rating shall:

(1) Have made at least 5 takeoffs and landings in solo flight or as sole manipulator of the controls when accompanied by a pilot rated for the aircraft for which the class or type rating is sought.

(2) Pass an appropriate flight test.

20.121–1 *Flight tests for additional ratings (FAA policies which apply to sec. 20.121).* The flight test required for an additional aircraft rating will include all procedures, maneuvers, and techniques not required for the pilot certificate and ratings already held.

(Published in 22 F.R. 5539, July 13, 1957, effective Aug. 1, 1957.)

20.121–2 *Five takeoffs and landings as pilot-in-command (FAA interpretations which apply to sec. 29.121 (b)(1)).* In airplanes which require more than one pilot (including the Douglas DC–3 and the Lockheed 18), the five takeoffs and landings may be accomplished as pilot-in-command, or as copilot performing the functions of the pilot-in-command while the instructor or check pilot performs the functions of copilot.

(Published in 23 F.R. 2244, Apr. 5, 1958, effective Apr. 30, 1958.)

Instrument Rating

20.125 *Issuance.* An instrument rating shall be issued to a private or commercial pilot who meets the prescribed aeronautical knowledge, experience, and skill requirements.

20.126 *Aeronautical knowledge.* An applicant shall pass a written examination based on the following:

(a) Civil Air Regulations as they apply to flight under IFR conditions;

(b) Radio navigation systems and procedures, instrument landing systems and procedures, and radio communication procedures; and

(c) Meteorology, including the characteristics of air masses and fronts and the weather associated with them; the elementary principles of forecasting; and the availability, evaluation, and utilization of the various types of meteorological reports.

20.126–1 *Instrument written examination (FAA policies which apply to sec. 20.126).* The instrument rating written examination is given by inspectors only.[6]

(Published in 22 F.R. 5539, July 13, 1957, effective Aug. 1, 1957.)

20.127 *Aeronautical experience.* An applicant shall meet the following minimum flight experience requirements:

(a) He shall hold (1) a commercial pilot certificate, or (2) a private pilot certificate and meet the aeronautical experience requirements of section 20.44 (a) and (b); and

(b) He shall have acquired 40 hours of instrument time under actual or simulated instrument conditions, of which not less than 20 hours shall have been in flight and have included 10 hours of instrument flight instruction given by a rated instrument flight instructor.

20.127–1 *Instrument flight instruction (FAA interpretations which apply to sec. 20.127(b)).* A "rated instrument flight instructor" as used in this section means the holder of a Limited Flight Instructor or a Flight Instructor Certificate, with an Instrument Instructor rating.

(Published in 22 F.R. 5539, July 13, 1957, effective Aug. 1, 1957.)

20.127–2 *Recommendation of flight instructor (FAA policies which apply to sec. 20.127).* The written recommendation of a Limited Flight Instructor, or a Flight Instructor, with an instrument instructor rating will be accepted for an application for the instrument rating flight test.

(Published in 22 F.R. 5540, July 13, 1957, effective Aug. 1, 1957, as amended in 23 F.R. 2244, Apr. 5, 1958, effective Apr. 30, 1958.)

20.128 *Aeronautical skill.* An applicant shall demonstrate a satisfactory level of competence in the following procedures and maneuvers:

[6] The Instrument Pilot Examination Guide, which gives information for use in preparing for the instrument rating written examination is available from local flying schools, or from the Government Printing Office, Washington 25, D.C., for 65 cents.

(a) Flight maneuvers, solely by reference to instruments, including recovery from critical attitudes such as steep turns, spirals, and stalls using the minimum instrumentation prescribed for instrument flight in Part 43 of this subchapter.

(b) Planning and conducting a simulated instrument flight including:

(1) Preparing and filing an instrument flight plan;

(2) Radio navigation including orientation;

(3) Radio communications;

(4) A standard instrument approach complying with traffic control instructions and standard holding procedures; and

(5) Recovery from emergency situations such as a missed approach, radio or instrument failure, and failure of an engine if the test is conducted in a multiengine airplane.

20.128–1 *Instrument rating flight test (FAA policies which apply to sec. 20.128).*

(a) *Flight test items.*

(1) The instrument rating flight test will be given in aircraft in which instrument flight is authorized by the regulations and the aircraft's equipment and operating limitations. All aircraft used for instrument flight tests shall have a hood, slats, polarized material, or other effective means of excluding outside visual reference from the pilot tested. The effectiveness of the means or device used shall be demonstrated to the satisfaction of the examiner.

(2) The flight test will be given in three phases. The failure of any required item in any phase will constitute the failure of that phase and of the whole test. The whole phase must be satisfactorily completed at the time of reapplication.

(3) A flight test may be discontinued at any time by the examiner or the applicant when the failure of a required item makes the successful completion of the test impossible. In such cases, credit will be allowed for only each whole phase successfully completed.

(4) The applicant will be required to demonstrate the competent performance of the following procedures and flight maneuvers by reference to flight instruments.

PHASE I—*Oral Operational Examination*

(i) Instrument flight planning.

(ii) Preparing and filing an instrument flight plan.

(iii) Aircraft performance, range, and fuel requirements.

(iv) Required instrumentation and equipment, and their proper use.

PHASE II—*Instrument Flying*

(i) Straight and level flight.[7]

(ii) Turns, climbs, and descents.[7]

(iii) Stalls, and maneuvering at approach speeds.

(iv) Steep turns.

(v) Recovery from unusual attitudes.[7]

(vi) Engine-out procedures, if test is given in multiengine airplane.

PHASE III—*Radio Navigation and Approach Procedures*

(i) Radio navigation, including orientation using LF, OMNI range, or ADF.

(ii) Use of radio for voice communication.

(iii) Standard instrument approach to authorized IFR weather minimums (not more than 500 feet and 1 mile), including holding procedures.

(iv) Missed approach procedures.

(v) Emergencies, such as radio or instrument malfunctions.

(vi) Compliance with airways traffic control instructions and procedures.

(b) *Evaluation of performance.* The applicant's performance will be evaluated on the basis of the judgment, smoothness, and accuracy displayed. Significant errors on the dangerous side will be disqualifying. Any error which make it necessary for the examiner to take over to avoid violating the aircraft's operating limitations, a loss of control, or collision with the ground will be disqualifying, and no second attempt will be allowed.

(Published in 22 F.R. 5540, July 13, 1957, effective Aug. 1, 1957.)

[7] Maneuvers will be required with the use of the needle, ball, and airspeed only.

Subpart G—Flight Instructor Certificates

20.130 *Limited flight instructor certificates.* A limited flight instructor certificate with appropriate ratings shall be issued to an applicant who meets the following requirements:

(a) He shall hold a valid airline transport or commercial pilot certificate or if he holds a private pilot certificate he shall meet the aeronautical knowledge, experience, and skill requirements for the issuance of a commercial pilot certificate;

(b) He shall demonstrate in each category of aircraft in which he desires to give flight instruction his ability to teach the performance of such flight maneuvers and procedures as are necessary and appropriate for the safe piloting of that category of aircraft; and

(c) He shall show that he is familiar with effective flight instruction methods and procedures as set forth in the FAA Flight Instruction Manual; or

(d) He shall demonstrate his ability to give instrument flight instruction if he desires to be rated as an instrument flight instructor.

20.130–1 *Limited flight instructor certificates (FAA policies which apply to sec. 20.130).*

(a) *Certificate and ratings.* The Limited Flight Instructor Certificate, will bear the same number as the holder's pilot certificate, and one or more of the following flight instructor ratings as appropriate:

(1) Airplanes.
(2) Rotorcraft.
(3) Gliders.
(4) Instrument.

(b) *Written examination.*[5]

(1) An applicant for a Limited Flight Instructor Certificate with a category rating will be given a written examination covering: (i) The "Fundamentals of Flight Instruction" and (ii) the "Performance and Analysis of Flight Training Maneuvers" appropriate to the instructor rating sought.

(2) A Limited Flight Instructor who applies for an additional instructor rating will be given the section of the written examination on the "Performance and Analysis of Flight Training Maneuvers" appropriate to the additional rating sought.

(c) *Practical test.* An applicant for a Limited Pilot Certificate will be given an oral examination and flight test to determine his proficiency in giving accurate, effective flight instruction. The applicant will be required to perform flight training maneuvers accurately; to detect, correct, and explain simulated student errors committed by the examiner. Flight instructor practical tests are given by inspectors only.

(d) *Instructor practical test items.* The flight instructor practical test will include the following items:

(1) *Oral examination—all ratings.*

(i) Application of effective flight instruction methods.

(ii) Knowledge of safe flying practices and principles.

(iii) Correctness and clarity of explanations.

(iv) Recognition of student errors (in flight and in postflight discussion).

(v) Cross-country flight planning.

(2) *Flight test—airplanes.*

(i) Preflight check and oral equipment examination.

(ii) Preflight operations.

(iii) Taxiing, or sailing and docking.

(iv) Straight flight and turns in climbs, glides, and level flight.

(v) Normal takeoffs and accuracy landings.

(vi) Crosswind takeoffs and landings.

(vii) Short field takeoff and power approach with landing.

(viii) Soft field takeoff and landing.

(ix) Slips to landings.

(x) Wheel landings in tailwheel type airplanes, or full stall landings in tricycle types.

(xi) Stalls from all normally anticipated flight attitudes, with and without power.

(xii) Maneuvering with minimum controllable airspeed.

[5] The Airplane Flight Instructor Examination Guide, which gives information on preparation for the airplane flight instructor written examination, is available from local flying school operators, or from the Government Printing Office, Washington 25, D.C., for 15 cents.

(xiii) Spins, right and left.

(xiv) 720° power turns.

(xv) Chandelles.

(xvi) Lazy eights, shallow and steep.

(xvii) Pylon eights, shallow and steep.

(xviii) Airport traffic patterns—rectangular courses and S-turns.

(xix) Use of radio for voice communication—traffic control procedures.

(xx) Emergency operation of airplane equipment; forced landings.

(3) *Flight test—rotorcraft.*[9]

(i) Preflight check and oral equipment examination.

(ii) Preflight operations.

(iii) Taxiing (if rotorcraft used is appropriately equipped).

(iv) Normal takeoffs and landings.

(v) Crosswind takeoffs and landings.

(vi) High altitude takeoffs and roll-on landings.

(vii) Climbs and descents.

(viii) Hovering—upwind, crosswind, and downwind.

(ix) Hovering 360° turns.

(x) Pattern flying with constant and with changing headings.

(xi) S-turns.

(xii) Rapid decelerations.

(xiii) Autorotative landings.

(xiv) Emergency operation of rotorcraft equipment.

(4) *Flight test—gliders.*

(i) Preflight check and oral equipment examination.

(ii) Preflight operations.

(iii) Auto, pulley, or winch tow.

(iv) Airplane tow—above, below, and to one side of slipstream.

(v) 360° approaches, right and left, landing within 100 feet beyond a line.

(vi) 3-turn spirals, right and left, at banks of at least 45°.

(vii) Stalls and slow flight.

(viii) Spins, right and left.

(5) *Flight test—instrument.*

(i) Instrument flight planning.

(ii) Preparing and filing an instrument flight plan.

(iii) Aircraft performance, range, and fuel requirements.

(iv) Required instrumentation and equipment, and their proper use.

(v) Straight and level flight.[10]

(vi) Turns, climbs, and descents.[10]

(vii) Stalls, and maneuvering at approach speeds.

(viii) Steep turns.

(ix) Recovery from unusual attitudes.[10]

(x) Engine-out procedures, if test is given in multiengine airplane.

(xi) Radio navigation, including orientation using LF, OMNI range, or ADF.

(xii) Use of radio for voice communication.

(xiii) Standard instrument approach to authorized IFR weather minimums (not more than 500 feet and 1 mile), including holding procedures.

(xiv) Missed approach procedures.

(xv) Emergencies, such as radio or instrument malfunctions.

(xvi) Compliance with airways traffic control instructions and procedures.

(Published in 22 F.R. 5540, July 13, 1957, effective Aug. 1, 1957.)

20.130–2 *Recommendation of Flight Instructor (FAA policies which apply to sec. 20.130).* The written recommendation of a Flight Instructor (not Limited Flight Instructor) with an appropriate aircraft category or instrument instructor rating will be accepted for the Limited Flight Instructor flight test.

(Published in 22 F.R. 5540, July 13, 1957, effective Aug. 1, 1957.)

20.131 *Renewal and reissuance.* A limited flight instructor certificate shall expire 24 calendar months after date of issuance but may be renewed or reissued upon presentation to the Administrator of a satisfactory flight instruction record or upon a practical demonstration of continued competence.

20.131–1 *Satisfactory flight instruction record (FAA policies which apply to sec. 20.131).* The inspector will determine the acceptability of a Limited Flight Instructor's flight instruction record on the basis of his continued maintenance of recent instruction experience require-

[9] Autogiro applicants will fly the test prescribed for airplanes so far as is possible in the aircraft used.

[10] Maneuvers will be required with the use of the needle, ball, and airspeed only.

ments, the successful performance of applicants recommended for flight tests, and the accident record achieved by the instructor and his students.

(Published in 22 F.R. 5540, July 13, 1957, effective Aug. 1, 1957.)

20.135 *Flight instructor certificates.* A flight instructor certificate with appropriate ratings shall be issued to an applicant who meets the following requirements:

(a) He has held a limited flight instructor certificate for a period of at least one year;

(b) He has trained at least 5 successful candidates for pilot certificates or instrument ratings; and

(c) He has demonstrated his competence in giving flight instruction as evidenced by the ability of his students to maintain a satisfactory level of flight safety while under his supervision and to pass the certification and rating tests for which he has prepared them.

20.135–1 *Candidates trained by a Limited Flight Instructor (FAA policies which apply to sec. 20.135(b)).* To qualify as one of the required five candidates trained by an applicant for a Flight Instructor certificate, a student must have received all of his required dual flight test preparation [11] and a written recommendation for the flight test from the Limited Flight Instructor making application.

(Published in 22 F.R. 5541, July 13, 1957, effective Aug. 1, 1957.)

20.135–2 *Additional flight instructor category ratings (FAA policies which apply to sec. 20.135).* The holder of a Flight Instructor certificate may qualify for and obtain additional flight instructor category ratings by passing the written examination on the "Performance and Analysis of Flight Training Maneuvers" and practical test appropriate to the rating sought.

(Published in 22 F.R. 5541, July 13, 1957, effective Aug. 1, 1957.)

20.136 *Flight Instruction Records.* A flight instructor or limited flight instructor shall comply with the following:

(a) He shall sign the student pilot's record for each period of flight instruction;

(b) He shall make a record containing the name of each student pilot whose certificate he has endorsed and to whom he has given flight instruction, the type of endorsement, and the date of each endorsement or flight instruction period, such record to be retained so long as he exercises the privileges of his flight instructor's certificate or 3 years, whichever is the shorter period of time.

20.136–1 *Flight instruction records (FAA policies which apply to sec. 20.136(b)).* The required flight instruction records may be kept separately, or in the instructor's own pilot logbook. In addition to the required records prescribed by section 20.136, a record should be kept by the flight instructor of the name of each student for whom the instructor has signed a recommendation for an official flight test, the type of test, and the date of his recommendation.

(Purchased in 23 F.R. 2244, Apr. 5, 1958, effective Apr. 30, 1958.)

20.137 *Limited flight instructor limitations.* A pilot certificate or instrument rating will be issued to a student trained by the holder of a limited flight instructor certificate only after such student has passed a flight test given by a FAA inspector.

20.137–1 *Applicants trained by Limited Flight Instructors (FAA policies which apply to sec. 20.137).* An applicant for a pilot certificate or rating who has received his required dual flight test preparation and flight test recommendation from a Limited Flight Instructor must take his flight test from an inspector. An applicant who has obtained his dual flight test preparation and flight test recommendation from a Flight Instructor may take his flight test from an inspector or a designated pilot examiner.

(Published in 22 F.R. 5541, July 13, 1957, effective Aug. 1, 1957.)

20.138 *Validity and exchange of flight instructor ratings.* The holder of a flight instructor rating may exercise the privileges of such rating until April 1, 1959. Prior to this date he may exchange such rating for a flight instructor certificate without further showing of competence. After April 1, 1959, the holder

[11] The dual minimum instruction required for various ratings is as follows:
Private pilot, airplane or rotorcraft—3 hours.
Private pilot, glider—1 hour.
Commercial pilot, airplane or rotorcraft—10 hours.
Commercial pilot, glider—2 hours.
Instrument rating—10 hours.

of a flight instructor rating shall not exercise the privileges of such rating but he may exchange it for a flight instructor certificate upon demonstrating continued competence to give flight instructions.

Note: **The record-keeping requirements contained herein have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942.**

20.138–1 *Exchange of Flight Instructor ratings for Flight Instructor certificates (FAA policies which apply to sec. 20.138).*

(a) Prior to July 1, 1958, an applicant may exchange a flight instructor rating for a Flight Instructor certificate with aircraft category ratings appropriate to the aircraft in which he qualified for the flight instructor rating. Prior to July 1, 1958, an applicant who is the holder of a flight instructor rating and an instrument rating, both issued prior to September 1, 1957, will be issued a Flight Instructor Certificate with an Instrument Instructor Rating.

(b) The holder of a flight instructor rating who fails to exchange his instructor rating for a Flight Instructor Certificate prior to July 1, 1958, may exchange it after that date by passing the appropriate practical test prescribed by section 20.130–1(d).

(Published in 22 F.R. 5541, July 13, 1957, effective Aug. 1, 1957.)

(xiii) Spins, right and left.

(xiv) 720° power turns.

(xv) Chandelles.

(xvi) Lazy eights, shallow and steep.

(xvii) Pylon eights, shallow and steep.

(xviii) Airport traffic patterns—rectangular courses and S-turns.

(xix) Use of radio for voice communication—traffic control procedures.

(xx) Emergency operation of airplane equipment; forced landings.

(3) *Flight test—rotorcraft.*[9]

(i) Preflight check and oral equipment examination.

(ii) Preflight operations.

(iii) Taxiing (if rotorcraft used is appropriately equipped).

(iv) Normal takeoffs and landings.

(v) Crosswind takeoffs and landings.

(vi) High altitude takeoffs and roll-on landings.

(vii) Climbs and descents.

(viii) Hovering—upwind, crosswind, and downwind.

(ix) Hovering 360° turns.

(x) Pattern flying with constant and with changing headings.

(xi) S-turns.

(xii) Rapid decelerations.

(xiii) Autorotative landings.

(xiv) Emergency operation of rotorcraft equipment.

(4) *Flight test—gliders.*

(i) Preflight check and oral equipment examination.

(ii) Preflight operations.

(iii) Auto, pulley, or winch tow.

(iv) Airplane tow—above, below, and to one side of slipstream.

(v) 360° approaches, right and left, landing within 100 feet beyond a line.

(vi) 3-turn spirals, right and left, at banks of at least 45°.

(vii) Stalls and slow flight.

(viii) Spins, right and left.

(5) *Flight test—instrument.*

(i) Instrument flight planning.

(ii) Preparing and filing an instrument flight plan.

(iii) Aircraft performance, range, and fuel requirements.

(iv) Required instrumentation and equipment, and their proper use.

(v) Straight and level flight.[10]

(vi) Turns, climbs, and descents.[10]

(vii) Stalls, and maneuvering at approach speeds.

(viii) Steep turns.

(ix) Recovery from unusual attitudes.[10]

(x) Engine-out procedures, if test is given in multiengine airplane.

(xi) Radio navigation, including orientation using LF, OMNI range, or ADF.

(xii) Use of radio for voice communication.

(xiii) Standard instrument approach to authorized IFR weather minimums (not more than 500 feet and 1 mile), including holding procedures.

(xiv) Missed approach procedures.

(xv) Emergencies, such as radio or instrument malfunctions.

(xvi) Compliance with airways traffic control instructions and procedures.

(Published in 22 F.R. 5540, July 13, 1957, effective Aug. 1, 1957.)

20.130–2 *Recommendation of Flight Instructor (FAA policies which apply to sec. 20.130).* The written recommendation of a Flight Instructor (not Limited Flight Instructor) with an appropriate aircraft category or instrument instructor rating will be accepted for the Limited Flight Instructor flight test.

(Published in 22 F.R. 5540, July 13, 1957, effective Aug. 1, 1957.)

20.131 *Renewal and reissuance.* A limited flight instructor certificate shall expire 24 calendar months after date of issuance but may be renewed or reissued upon presentation to the Administrator of a satisfactory flight instruction record or upon a practical demonstration of continued competence.

20.131–1 *Satisfactory flight instruction record (FAA policies which apply to sec. 20.131).* The inspector will determine the acceptability of a Limited Flight Instructor's flight instruction record on the basis of his continued maintenance of recent instruction experience require-

[9] Autogiro applicants will fly the test prescribed for airplanes so far as is possible in the aircraft used.

[10] Maneuvers will be required with the use of the needle, ball, and airspeed only.

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ments, the successful performance of applicants recommended for flight tests, and the accident record achieved by the instructor and his students.

(Published in 22 F.R. 5540, July 13, 1957, effective Aug. 1, 1957.)

20.135 *Flight instructor certificates.* A flight instructor certificate with appropriate ratings shall be issued to an applicant who meets the following requirements:

(a) He has held a limited flight instructor certificate for a period of at least one year;

(b) He has trained at least 5 successful candidates for pilot certificates or instrument ratings; and

(c) He has demonstrated his competence in giving flight instruction as evidenced by the ability of his students to maintain a satisfactory level of flight safety while under his supervision and to pass the certification and rating tests for which he has prepared them.

20.135–1 *Candidates trained by a Limited Flight Instructor (FAA policies which apply to sec. 20.135(b)).* To qualify as one of the required five candidates trained by an applicant for a Flight Instructor certificate, a student must have received all of his required dual flight test preparation [11] and a written recommendation for the flight test from the Limited Flight Instructor making application.

(Published in 22 F.R. 5541, July 13, 1957, effective Aug. 1, 1957.)

20.135–2 *Additional flight instructor category ratings (FAA policies which apply to sec. 20.135).* The holder of a Flight Instructor certificate may qualify for and obtain additional flight instructor category ratings by passing the written examination on the "Performance and Analysis of Flight Training Maneuvers" and practical test appropriate to the rating sought.

(Published in 22 F.R. 5541, July 13, 1957, effective Aug. 1, 1957.)

20.136 *Flight Instruction Records.* A flight instructor or limited flight instructor shall comply with the following:

(a) He shall sign the student pilot's record for each period of flight instruction;

(b) He shall make a record containing the name of each student pilot whose certificate he has endorsed and to whom he has given flight instruction, the type of endorsement, and the date of each endorsement or flight instruction period, such record to be retained so long as he exercises the privileges of his flight instructor's certificate or 3 years, whichever is the shorter period of time.

20.136–1 *Flight instruction records (FAA policies which apply to sec. 20.136(b)).* The required flight instruction records may be kept separately, or in the instructor's own pilot logbook. In addition to the required records prescribed by section 20.136, a record should be kept by the flight instructor of the name of each student for whom the instructor has signed a recommendation for an official flight test, the type of test, and the date of his recommendation.

(Purchased in 23 F.R. 2244, Apr. 5, 1958, effective Apr. 30, 1958.)

20.137 *Limited flight instructor limitations.* A pilot certificate or instrument rating will be issued to a student trained by the holder of a limited flight instructor certificate only after such student has passed a flight test given by a FAA inspector.

20.137–1 *Applicants trained by Limited Flight Instructors (FAA policies which apply to sec. 20.137).* An applicant for a pilot certificate or rating who has received his required dual flight test preparation and flight test recommendation from a Limited Flight Instructor must take his flight test from an inspector. An applicant who has obtained his dual flight test preparation and flight test recommendation from a Flight Instructor may take his flight test from an inspector or a designated pilot examiner.

(Published in 22 F.R. 5541, July 13, 1957, effective Aug. 1, 1957.)

20.138 *Validity and exchange of flight instructor ratings.* The holder of a flight instructor rating may exercise the privileges of such rating until April 1, 1959. Prior to this date he may exchange such rating for a flight instructor certificate without further showing of competence. After April 1, 1959, the holder

[11] The dual minimum instruction required for various ratings is as follows:
Private pilot, airplane or rotorcraft—3 hours.
Private pilot, glider—1 hour.
Commercial pilot, airplane or rotorcraft—10 hours.
Commercial pilot, glider—2 hours.
Instrument rating—10 hours.

of a flight instructor rating shall not exercise the privileges of such rating but he may exchange it for a flight instructor certificate upon demonstrating continued competence to give flight instructions.

Note: **The record-keeping requirements contained herein have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942.**

20.138–1 *Exchange of Flight Instructor ratings for Flight Instructor certificates (FAA policies which apply to sec. 20.138).*

(a) Prior to July 1, 1958, an applicant may exchange a flight instructor rating for a Flight Instructor certificate with aircraft category ratings appropriate to the aircraft in which he qualified for the flight instructor rating. Prior to July 1, 1958, an applicant who is the holder of a flight instructor rating and an instrument rating, both issued prior to September 1, 1957, will be issued a Flight Instructor Certificate with an Instrument Instructor Rating.

(b) The holder of a flight instructor rating who fails to exchange his instructor rating for a Flight Instructor Certificate prior to July 1, 1958, may exchange it after that date by passing the appropriate practical test prescribed by section 20.130–1(d).

(Published in 22 F.R. 5541, July 13, 1957, effective Aug. 1, 1957.)

Appendix A

Aircraft Type Ratings

This appendix contains the type ratings which the holder of a pilot certificate may be issued upon meeting the flight test standards applicable thereto.

Aircraft Type Ratings Issued

I. CIVIL AIRCRAFT*

Manufacturer	Model Designations	Certificate Type Ratings
[Armstrong-Whitworth	AW 650 Argosy	Armstrong-Whitworth AW 650]
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
	YC-97	Boeing YC-97
	Boeing 707, [VC-137]	Boeing [707/720]
[Canadair Limited	Canadair CL-44 D4	Canadair CL-44 D4]
Chase	YC-122	Chase YC-122
Consolidated Vultee	28-4, 28-5ACF, PBY-5, OA-10, PBY-5A, OA-10A.	Consolidated Vultee PBY
	Convair 240, 340, 440, T-29, C-131, R4Y	Convair 240-340-440
	Convair 880	Convair 880
	[Convair 340/440 Napier Eland Mark I or Mark II.	Napier Eland Convair Mark I/II
	[Allison Prop Jet Convair 340/440	Allison Convair 340/440]
Curtiss-Wright	C-46A, D, E, F	Curtiss-Wright C-46
Douglas	DC-3, C-47, C-48, C-49, C-50, C-51, C-52, C-53, C-68, R4D-1-2-3-4-5-6.	Douglas DC-3
	Super DC-3, R4D-8, R4D-Z	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, C-34, C39, C42, R2D-1.	Douglas DC-2
	DC-8	Douglas DC-8
	B-18	Douglas B-18
	B-23, UC-67	Douglas B-23
Fairchild	F-27 Friendship	Fairchild F-27
Ford	4AT-B, 4-AT-E, 5AT-B, 5AT-C, 5AT	Ford 5
Grumman	G-73 or Mallard	Grumman G-73
	SA-16 or Albatross	Grumman SA-16
	G-159 Gulfstream	Grumman G-159
Lockheed	14N	Lockheed 14
	49, 049, 149, 649, 649A, 749, [1049-B-C-D-E, F, G, H,] 1649, C-69, C-121, R7V-1.	Lockheed Constellation
	18, C57, C59, C60, R50	Lockheed 18
	188 Series (Electra)	Lockheed 188
	Jetstar	Lockheed Jetstar
Martin	202, 202A, 404	Martin 202-404
North American	Sabreliner (USAF UTX)	North American Sabreliner
Sikorsky	S-43, S-43W	Sikorsky S-43
	S-58A, S-58B, S-58C	Sikorsky S-58
	VS44A	Sikorsky VS-44
[Sud Aviation	SE 210 Caravelle	Sud 210 Caravelle]
Vertol	Model 42, Model 44	Vertol 44
Vickers	700 or 800 Series	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 identifications; 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 those listed 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 FAA for civilian use.

V. Type ratings may be issued for aircraft listed above if a provisional airworthiness certificate has been issued for the airplane.

Appendix B

SPECIAL CIVIL AIR REGULATION NO. SR–434A

Effective: Sept. 9, 1961
Adopted: Sept. 5, 1961
Published: Sept. 9, 1961
(26 F.R. 8484)

Elimination of Requirement for 100-Mile Solo Flight Experience for Issuance of Private Pilot Certificate on Island of Okinawa

Section 20.34(c) of the Civil Air Regulations presently provides that the aeronautical experience necessary for issuance of a private pilot certificate shall include 10 hours of solo cross-country flight time, at least one flight of which shall include a landing at a point more than 100 miles from the point of departure. The Naha Air Base Aero Club, a flying club composed of U.S. civil and military personnel located at the Sukiran Army Air Field on Okinawa and sponsored by the United States Air Force, was granted, on July 9, 1959, an exemption from the requirements of section 20.34(c) because the island is not large enough to permit the required 100-mile flight. The Naha Club has requested that the exemption granted in Special Civil Air Regulation No. SR–434 which expired on June 30, 1961, be renewed for an indefinite period.

Okinawa is some 60 miles long and from 2 to 22 miles wide. The maximum distance between airports on the island is some 40 miles. Landings more than 100 miles from a point of departure on Okinawa may be made on other islands in the area, but such other islands are not equipped with adequate landing areas and flights to such landing areas would expose pilot trainees to the unnecessary hazard of overwater operations.

The purpose of the requirement for a 100-mile solo cross-country flight is to develop the necessary skills in navigation from maps and unfamiliar visual landmarks. The experience to be gained from a 100-mile cross-country flight would not be of any special value or assistance to a private pilot flying on Okinawa over that to be gained from a 40-mile cross-country flight on Okinawa. It appears that such a 40-mile flight as part of the 10 hours of solo cross-country flight time required by section 20.34(c) would so familiarize a pilot with the landmarks and terrain of the area in which he would be flying as to constitute an adequate standard of safety for issuance of a pivate pilot certificate for the island of Okinawa. A pilot holding such a certificate who may wish to obtain a certificate without limitation to Okinawa would still be required to comply with the experience requirement for the 100-mile solo cross-country flight prescribed by section 20.34(c).

Accordingly, Special Civil Air Regulation No. SR–434 was issued to permit such pilots to obtain a limited private pilot certificate without compliance with the 100-mile solo cross-country flight requirement of section 20.34(c). The conditions under which SR–434 was issued have not changed and since this regulation imposes no additional burden on any person, relieves a restriction, and constitutes a grant of exemption, compliance with the notice, public participation, and effective date provisions of section 4 of the Administrative Procedure Act is unnecessary.

In consideration of the foregoing, the following Special Civil Air Regulation is hereby promulgated to become effective September 9, 1961:

1. The provision of section 20.34(c) of Part 20 of the Civil Air Regulations with respect to a 100-mile solo cross-country flight shall not apply to the issuance of a private pilot certificate to an applicant who demonstrates on the island of Okinawa, Ryukyu Islands, that he is otherwise eligible for issuance of such certificate and who has completed a solo cross-country flight between those airports on Okinawa which are the farthest apart. A pilot certificate issued pursuant to this regulation shall contain the following limitation:

> "The holder shall not pilot any aircraft carrying passengers except on flights over the island of Okinawa and within a radius of 40 miles from the airport of take-off."

2. The holder of a private pilot certificate issued subject to the limitations provided in paragraph 1 of this regulation may obtain a private pilot certificate without such limitation upon presentation to an inspector of the Federal Aviation Agency of satisfactory evidence of compliance with the 100-mile solo flight experience requirement of section 20.34(c) and after satisfactorily accomplishing a practical examination with respect to the procedures and maneuvers prescribed by section 20.35(b).

This special regulation renews the provisions contained in Special Civil Air Regulation No. SR–434, which expired on June 30, 1961, and shall continue in effect until superseded or revoked.

Appendix C

CIVIL AIR REGULATIONS AMENDMENT 20–12

Effective: March 16, 1960
Issued: November 16, 1959

Knowledge, Experience, and Skill Requirements for Private and Commercial Certificates

The adequacy of the knowledge, experience, and skill requirements prescribed for applicants seeking private and commercial pilot certificates has been under evaluation since February 1958, when the Civil Aeronautics Board published and circulated Civil Air Regulations Draft Release No. 58–2 proposing certain amendments to those requirements. Industry comment was requested by April 18, 1958, and the time for submission of comment was later extended to July 15, 1958. The proposed amendments were not acted on by the Board prior to December 31, 1958. The Federal Aviation Agency has continued active consideration of the adequacy of the present requirements of Part 20 and has considered the amendments proposed by Draft Release 58–2 and the industry comment submitted in connection with the release.

We find that Part 20 should be amended to require:

1. Dual instruction in the basic control of the airplane by reference to instruments in the private pilot aeronautical experience requirements, and inclusion in the skill requirements of a demonstration of emergency capability in attitude control simulating loss of visual reference during flight operations.

2. A minimum of 10 hours of instrument flight instruction in the aeronautical experience requirements for the commercial pilot.

3. Inclusion of a demonstration of ability to control the aircraft solely by reference to instruments in the commercial pilot skill test requirements.

4. Familiarity with and a demonstration of the use of radio for communications and navigation in the cross-country requirements for private and commercial pilots.

5. A demonstration of cross-country planned flight in the skill test required for commercial pilots.

Draft Release 58–2 proposed an increase of flight experience from 40 to 50 hours for the private pilot applicant. The comment received showed strong objection to a 10-hour increase, but general agreement with the benefits of some instrument training for the private pilot. Recent research conducted in primary flight training at West Virginia University has demonstrated that students who learn to observe and use flight instruments from the beginning of their flight training are much more proficient in holding attitude, altitude, headings and airspeeds in normal VFR flight. Early training develops a keener appreciation of the conditions which must be avoided to prevent involvement with IFR situations and the realization that only a fully trained and qualified instrument pilot should attempt flight under instrument weather conditions. Further, the trainee is provided with the incentive to secure additional training leading to qualification as an instrument-rated pilot.

Flight training which included the early and integrated use of instruments throughout the course did not appreciably increase the total hours required for private pilot certification and consistently produced more competent applicants than those without benefit of such integrated instrument training.

After consideration of all these factors it is felt that no additional mandatory increase in minimum flight experience for the private pilot applicant should be made. Rather, it is left to the individual ability of the student and his instructor to meet the performance standards set forth in this regulation as aeronautical skill requirements. It is believed that the use of a qualified instrument trained flight instructor will prove economical in the saving of flight time time required of the average student to meet these performance standards, although this regulation imposes only the requirement that the instructor be the holder of a current Flight Instructor Certificate.

In contrast with the record of no appreciable increase in the total hours of flight instruction required for producing a better private pilot applicant at the West Virginia University research course, a recent survey of several hundred records chosen at random from Federal Aviation Agency files revealed that the average flight time required by the private pilot applicant under present requirements exceeded 60 hours. This is 25 hours above the approved school minimum and 20 hours above the nonapproved school applicant. Federal Aviation Agency records show that about one-half of the active flight instructors now hold instrument ratings and it is urged that operators and students alike make full use of these rated instructors as first choice for their training program.

The number of fatal accidents clearly indicates the need for higher private pilot qualifications. During 1958, private pilots were involved in a total of 272 major accidents in which 345 pilots and passengers were killed and 155 seriously injured. Of these accidents, 120 or 44 percent resulted from inability to cope with emergencies which developed primarily en route, such as becoming lost, loss of control in instrument conditions, and collision with objects in reduced visibility. A total of 125 or 46 percent resulted from fundamental weaknesses in pilot judgment or technique such as stall/spin due to inadequate speed control, attempting operation beyond the pilot's or aircraft's capability, inadequate or no preflight planning or preparation, and exhausting or mismanaging fuel.

We find current trends in general aviation are rapidly bringing about significant changes in the use of airplanes. The performance characteristics and equipment of many aircraft now in production permit flights of considerable distance in a matter of a few hours. This desirable feature in itself brings about exposure to variable and unanticipated visibility conditions. Present navigational equipment makes possible and even encourages continuation of flight under conditions of deteriorating weather, approaching darkness, or on top of an overcast. Also, many of today's airplanes are equipped with instruments which will permit attitude control without reference to the ground provided the pilot has been trained to use them. By contrast, general aviation in the past has been characterized generally by local or medium distance flights during which constant weather conditions usually prevailed.

In consideration of these advantages, the flight test for a private pilot certificate is being revised to require a demonstration of ability to control the attitude of an airplane in flight solely by reference to instruments. The training to meet these standards will be integrated with the student's other

primary dual instruction and is not to be given as a separate block of instrument flight instruction. Emphasis given in the instrument training shall be toward development of a better trained and more proficient pilot by providing additional tools and teaching their proper use. Many persons opposed this requirement based on the erroneous opinion that each aircraft utilized would require the same full instrumentation necessary for IFR operations prescribed by Part 43 of the Civil Air Regulations. An artificial horizon is desirable; however, for the purpose of providing this instruction, the only required additional instruments over those prescribed for VFR operations by Part 43 is a turn and bank indicator and sensitive altimeter. The turn indicator may be driven electrically or by vacuum derived from a motor-driven or venturi installation. The extended visor cap is recommended as a means of simulating instrument flight conditions. This method permits the flight instructor to better observe and avoid other traffic.

Section 20.44(d) presently provides for 10 hours of instrument flight experience for the commercial pilot applicant but only as an alternative to not having his certificate endorsed to state that fact. This amendment eliminates this provision and makes the 10 hours of instrument flight experience a required standard for the issuance of a commercial pilot certificate. Provision is made for the reissuance of a certificate without endorsement to the holder of a currently endorsed certificate upon showing evidence of having met the instrument flight experience requirements of this amendment. Since there are no operating restrictions issued in connection with the endorsement, it is meaningless except that a certificate so endorsed may not be valid for use in foreign countries because it does not meet the commercial pilot standards prescribed by Annex I of the International Civil Aviation Organization (ICAO). Adoption of this amendment will permit the United States to notify ICAO that our certification standards for the commercial pilot meet this international standard.

The principal reason for the adoption of the 10 hours of flight experience and demonstration of skill stems from the fact a commercial pilot has the privilege of piloting aircraft for hire. During cross-country flight he may encounter unanticipated adverse weather conditions, particularly at night, and he should be able to control the attitude of the airplane by reference to instruments and to cope with reduced visibility conditions in piloting the airplane out of such areas. Therefore, 10 hours of instrument flight experience and a demonstration of ability to control an airplane in flight solely by reference to instruments is being required for the commercial pilot applicant.

It should be clearly understood that the instrument training and demonstration of basic instrument flight capability required by this amendment for private and commercial pilot applicants convey no instrument flying privileges. To engage in instrument operations, the pilot must hold an instrument rating and the airplane must be equipped for IFR operations as prescribed by Part 43 of the Civil Air Regulations.

The changes included in this amendment constitute part of our safety program designed to improve the competence of the student, private, and commercial pilot. Additional revisions of the Civil Air Regulations to further implement this safety program are under consideration and if adoption is found desirable, will be circulated for industry comment. It is to be noted

the amendments herewith adopted will come into effect 4 months after the adoption date. This period has been provided to permit pilots now in training ample opportunity to be certificated under the present requirements if desired.

In consideration of the foregoing, and since the changes included in this amendment substantively agree with those published as a notice of proposed rule making in the Federal Register (23 F.R. 1014), Part 20 of the Civil Air Regulations (14 CFR Part 20) is hereby amended as follows, effective March 16, 1960:

1. By amending section 20.24(b) to read as follows:

20.24 Flight area limitations. * * *

(b) He has received dual instruction in:

(1) Crosswind and simulated soft-field takeoffs and landings;

(2) Climbing and gliding turns at minimum safe speeds;

(3) Cross-country navigation by reference to aeronautical charts;

(4) Safe operating procedures in simulated emergencies such as engine failure, loss of flying speed, marginal visibility, deteriorating weather, getting lost, and similar critical situations;

(5) Conforming with air traffic control instructions by radio and lights; and

(6) The proper use of two-way radio communications, VFR navigation procedures and techniques: *Provided,* That in areas where ground electronic communication equipment and navigational aids are not available within 100 miles of the base of operation, a synthetic trainer may be used for training in air traffic procedures, phraseology, and radio navigation; and

2. By amending section 20.33(b) to read as follows:

20.33 Aeronautical knowledge. * * *

(b) The practical aspects of cross-country flying, including flight planning, map reading, pilotage, radio communication procedures, radio navigation, and emergency procedures;

3. By amending section 20.34 by redesignating the present paragraph (d) as paragraph (e), and by inserting a new paragraph (d) to read as follows:

20.34 Aeronautical experience. * * *

(d) Dual instruction in the control of an airplane solely by reference to instruments, given by the holder of a flight instructor certificate with an airplane rating. The airplane shall be equipped with at least a sensitive altimeter, turn and bank indicator, and a means for simulating instrument flight conditions. This instruction by reference to instruments shall be integrated with the dual flight instruction in primary flight maneuvers given before and after solo; and

4. By amending section 20.35(b) to read as follows:

20.35 Aeronautical skill. * * *

(b) Planning of a VFR cross-country flight to a specified destination, reckoning with weather conditions, fuel requirements, check points, estimated time of arrival, available alternate airports, radio communication and navigation procedures, air traffic control procedures, and accomplishing such portion of the planned flight, including change of course to an alternate airport, and execution of emergency procedures, as are necessary to demonstrate proficiency in cross-country flying.

5. By amending section 20.35 by inserting a new paragraph (g) to read as follows:

20.35 Aeronautical skill. * * *

(g) Demonstrate in simulated instrument flight to an FAA Inspector or a designated flight examiner with an instrument rating ability to safely control an aircraft manually by sole reference to the aircraft flight instruments. This demonstration shall include manual control in the following:

(1) Recovery from the start of a power-on spiral;

(2) Recovery from the approach to a climbing stall;

(3) Normal turns of 180° duration left and right to within ±20° of proper 180° heading;

(4) Shallow climbing turns to a predetermined altitude;

(5) Shallow descending turns at reduced power to a predetermined altitude; and

(6) Straight and level flight.

Note: The basic criteria for a satisfactory demonstration shall be safe and positive manual control, not precision in speed, altitude, and direction control. Nevertheless, unsafe or unsure control of airspeed, erratic loss or gain of altitude or consistent failure to maintain the general direction of flight shall be disqualifying. The intent of this added aeronautical experience and skill is basically as follows: This student or applicant has just flown suddenly into worsening weather conditions which make further control of the aircraft by visual reference to the ground unsafe or unlikely. He allows the aircraft to assume an attitude that, if continued, would result in a probable uncontrollable maneuver. Can he recover from this position safely and then turn back in the proper direction where known pilotage weather conditions exist, while at the same time adjusting and maintaining altitude control that will clear safely terrain and other obstructions. If he can do this consistently, with positive and safe control, he is a much safer private pilot. It is important, however, that all through the course of instruction, the student has stressed to him the danger of operating into weather flight conditions described above and that this minimum ability can be fatal if proper respect is not maintained by him.

6. By amending section 20.43 (a) and (b) to read as follows:

20.43 Aeronautical knowledge. * * *

(a) Meteorology, including recognition of basic weather conditions and trends, and the acquisition and use of weather information disseminated by the U.S. Weather Bureau such as hourly sequence reports, terminal forecasts, winds aloft reports, and reading and interpreting weather maps;

(b) Navigation, including pilotage, dead reckoning, the use of instruments and radio aids to navigation, proper radio frequency utilization, radiotelephone procedures and techniques, flight planning, emergency procedures, preflight and inflight services for pilots, and notices to airmen;

7. By amending section 20.44 (b), (c), and (d) to read as follows:

20.44 Aeronautical experience. * * *

(b) 100 hours as pilot in command, including:

(1) 50 hours of cross-country, each flight including a landing more than 25 miles from the point of departure;

(2) Takeoffs and landings from at least two different airports in accordance with two-way radio instructions from an airport traffic control tower; and

(3) One cross-country flight of at least 350 miles, including landings at 3 points, one of which must be not less than 150 miles from the point of departure;

(c) 10 hours of dual instruction in airplanes in preparation for the commercial pilot flight test. Such dual instruction shall have been acquired within the 6 months preceding the commercial pilot flight test; and

(d) 10 hours of instruction in the operation of an airplane in flight solely by reference to instruments, which shall include not less than 5 hours of dual instrument instruction, given by a rated instrument flight instructor. The remaining 5 hours may be given by the holder of a flight instructor certificate with an airplane rating.

Note: The holder of a commercial pilot certificate bearing an endorsement that he did not meet the required 10 hours of instrument flight experience may have such endorsement removed upon presentation of reliable documentary evidence showing that he has met the 10 hours of required flight instruction and has successfully accomplished the skill test required by section 20.45(e).

8. By amending section 20.45 by inserting three new paragraphs (e), (f), and (g) to read as follows:

20.45 Aeronautical skill. * * *

(e) Demonstrate in simulated instrument flight to an FAA Inspector or a designated flight examiner with an instrument rating ability to safely control an aircraft manually by sole reference to the aircraft flight instruments. This demonstration shall include manual control in the following:

(1) Recovery from a well-developed power-on moderate turn spiral in a medium banked attitude.

(2) Recovery from a high-angle climb in a turn.

Note: High-angle climb is one that if allowed to continue another 30 seconds at cruising power would result in stalling the aircraft.

(3) Standard rate turns of 180° and 360° duration to within ±10° and ±20°, respectively, of proper heading, and within ±150 feet of altitude.

(4) Maximum safe performance climbing turns of 180° duration followed by continued straight climb to predetermined altitude requiring not less than one minute straight climb performed within ±10 knots of airspeed and ±10° of proper heading.

(5) Two consecutive descending 90° turns using normal approach power for reducing altitude performed within ±10 knots of airspeed and ±10° of proper heading. At completion of first 90° turn continue straight descent for 1 minute. Complete second 90° descending turn and continue straight descent for 1½ minutes.

Note: This maneuver can be used to simulate a safe but not precise low approach (1,000 feet) to an airport, with the instructor acting as radar advisory control.

(6) Straight and level flight performed within ±10° of proper heading, 100 feet of altitude and 10 knots of airspeed.

Note: Safe and positive manual control, not precision, is the basic criteria for a satisfactory demonstration but the commercial pilot applicant must maintain control of the aircraft within the prescribed limits of heading, altitude, and airspeed.

(f) Planning a cross-country flight to a specified destination reckoning with weather conditions and forecasts, winds aloft information, airport and radio navigational facilities; pertinent aircraft characteristics, range, and performance; and use of appropriate charts.

(g) Cross-country flying using pilotage, dead reckoning, and radio aids for navigation, including change of course to an alternate airport, coping with simulated in-flight emergencies, and the use of radio for two-way communications with appropriate ground radio facilities.

9. By adding a note at the end of sections 20.35 and 20.45 to read as follows:

Note: Detailed information on present flight test procedures and standards are contained in Flight Operation and Airworthiness Release No. 420. Revision of the information in this release will be issued as FAA Bureau of Flight Standards Flight Test Guides and will contain appropriate supplemental information concerning the maneuvers required by these amendments. These flight test guides may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.

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