SAFETY BUREAU
CIVIL AERONAUTICS BOARD
Washington 25, D. C.

March 24, 1944

SUGGESTED REVISIONS OF PART 20 OF THE CIVIL AIR REGULATIONS

Some weeks ago the Civil Aeronautics Board authorized the Safety Bureau to circulate a suggested revision of the Air Traffic Rules for preliminary comment by interested parties prior to consideration by the Board. This was the first of a series of three steps in the revision of those Parts of the Civil Air Regulations affecting student, private, and commercial pilots. We now submit in the same manner some suggested revisions of Part 20 dealing with the certification of such pilots. In order to save your time in becoming acquainted with the proposed changes and commenting thereon we are itemizing the important changes below and including a brief discussion with each instead of submitting a complete draft of a proposed revised Part 20.

The final revision of the certification rules will be shortened and simplified and the pilot rules deleted. Within a short time we will submit a new Part which will consist of sections of the present Parts 01, 20, and 60, and which will contain aircraft and pilot rules. When this work of revision has been completed the three Parts will be as follows:

Part 20 - Certification Rules,
Part 43 - Aircraft and Pilot Rules,
Part 60 - Air Traffic Rules.

This arrangement will permit a pilot, after obtaining his certificate in accordance with Part 20, to find all the rules under which he will operate aircraft in two Parts of the Civil Air Regulations, which we intend to make as short and simple as possible.

The principal changes and those upon which your comment is desired are set forth below:

(1) Certificates and ratings. Instead of issuing an Airman Certificate with the privileges of private pilot or commercial pilot as at present, it is proposed to issue a Pilot Certificate and show the designation as private or commercial pilot on the Rating Record. This would permit a person who holds, for example, a private Pilot Certificate and is rated for single-engine land airplanes to qualify as a commercial pilot on helicopters, without having also to increase his competency on single-engine land airplanes to the commercial level as is presently required.

(2) Age. It is proposed to reduce the minimum age for a private Pilot Certificate to 16 years instead of 18 years as at present. This would permit a person who secures a Student Pilot Certificate at the age of 16 to secure his private Pilot Certificate as soon thereafter as he is otherwise qualified without waiting two years merely because of the age requirement.

(3) Education. It is proposed to eliminate the specific requirement that a student or private pilot must be able to read, write, speak, and understand the English language if appropriate operation limitations may be entered on the Rating Record. This would permit, for example, a mute who is otherwise qualified and could pass the necessary examinations to obtain a certificate. Such a relaxation would not be feasible, of course, for a commercial, instrument, or instructor rating.

(4) Physical requirements. Two suggestions are offered with respect to physical requirements for student and private pilots. One proposal would prescribe a physical examination every two years to be accomplished by any qualified physician of the pilot's own choosing. Another proposal would prescribe but one physical examination by an authorized medical examiner of the Administrator taken at the time the certificate is first issued. From this time on it would be the pilot's own responsibility not to fly if his physical condition became such that he could not pass the original examination. In either case it may be that the examination can be more general in nature and consist of a determination that the applicant has adequate eyesight and no ailments which might cause him to become incapacitated suddenly or unexpectedly.

(5) Aeronautical knowledge. It is proposed that a student pilot prior to being endorsed for first solo cross-country flight in powered aircraft pass a written examination on (1) the pertinent provisions of the new Part which will deal with the operation of private aircraft, (2) the contact flight rules of Part 60, (3) safety practices and procedures, and (4) his ability to interpret aeronautical charts. No other navigation or meteorology would be included other than perhaps certain important elements of weather knowledge such as significant cloud forms, potential fog conditions, etc. After accomplishing such an examination no further written tests would be required to obtain a private Pilot Certificate. Comment is particularly desired on the elimination of the navigation and meteorology requirements. The Civil Aeronautics Administration is planning the preparation of a small booklet which will contain all of the information necessary in order to pass the written examination leading to a private Pilot Certificate.

(6) Aeronautical experience. It is proposed to change the present flight time requirements of 8 hours dual and 35 hours solo for conventional three-control spinnable airplanes to 10 hours dual and 30 hours solo and to change the present 5 hours dual and 25 hours solo in two-control nonspinnable airplanes to 7 hours dual and 20 hours solo. In either case the specified dual time would be the total dual time required in order to obtain a private Pilot Certificate and no minimum would be prescribed before first solo. It is believed that this item may be left safely to the discretion of the instructor since there would be little to be gained from an early first solo so long as a total amount of dual time is prescribed.

(7) Aeronautical skill. The proposed flight test for a private Pilot Certificate is modified somewhat and is as follows:

"(a) Applicant for a powered aircraft rating must demonstrate his ability to competently perform the following maneuvers:

(1) a series of three landings from an altitude not to exceed 1,000 feet with engine throttled and a 180-degree change in direction, the aircraft touching the ground in normal landing attitude within 300 feet beyond a designated mark. At least one landing must include a forward slip;

(2) three moderately banked figure eights either "on pylon" or "around pylon", the variation in altitude not exceeding 200 feet;

(3) a 720-degree power turn in each direction in a banked attitude of not less than 60 degrees, the variation in altitude not exceeding 200 feet;

(4) a right and left-hand spin, each of at least one full turn;

(5) recovery from stalls.

Any of the above required maneuvers may be modified or eliminated if such action is appropriate to the characteristics of the aircraft used in the test and appropriate operation limitations are entered on the Rating Record."

Certain elements of the present flight test have been eliminated in an effort to stress more the applicant's ability to fly safely rather than his ability as a precision pilot. Spirals, steep figure eights, and simulated forced landings among others have been eliminated.

It will be noted that the flight test is still written basically around the conventional three-control spinnable airplane. It is apparent that in the not too distant future it will be necessary to specify separately the flight tests for other types of aircraft such as two-control nonspinnable airplanes, helicopters, etc. In the meantime, however, the above requirements will form the basis for such flight tests and may be appropriately modified to suit individual cases as indicated in the last quoted paragraph above.

(8) Duration. It is proposed to limit the duration of a Student Pilot Certificate to two years. It seems neither necessary nor desirable to issue permanent Student Pilot Certificates since the only reason for holding such a certificate should be the enabling of a person to acquire the necessary experience and skill to permit him to secure a private Pilot Certificate. Furthermore, the time necessary to secure a private Pilot Certificate should be materially reduced by reason of the proposed simplification of the requirements.

(9) Airplane horsepower ranges. The present limit of 80 horsepower as applied to the lowest horsepower range now used for rating purposes was established at a time when engines of 80 horsepower were about the maximum then used in so-called light aircraft. It appears likely, however, that due to the present trend in low-powered engine design we may reasonably expect airplanes of something more than 100 horsepower to be made available which have the same general characteristics as the presently used airplanes of 80 horsepower or slightly less. It may be appropriate at this time, therefore, to increase the 80 horsepower limitation to 130 horsepower, for example. Your comments on this point will be appreciated.

(10) Commercial, instructor, and instrument ratings. Practically no changes of importance are proposed at this time with respect to these ratings except in the matter of language changes, arrangement, etc. It will be necessary, of course, to include in the instrument rating written examination questions on the instrument flight rules of Part 60 and other meteorological and navigational questions inasmuch as these subjects have been left out of the basic requirements for a private Pilot Certificate.

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We wish to express our appreciation for the large number of comments received on the proposed Part 60. We particularly appreciate the constructive criticism offered. Within the next few weeks we will circulate suggested modifications of several items in this Part on which there has been some difference of opinion and which we hope will meet with general approval. Contact weather minimums is one these. We would like to have your comment on the suggested revisions of Part 20 on or before June 1, 1944.

Jesse W. Lankford
Director, Safety Bureau

SAFETY BUREAU
CIVIL AERONAUTICS BOARD
WASHINGTON 25, D. C.

November 10, 1944

PROPOSED PARTS 20, 43 AND 60 OF THE CIVIL AIR REGULATIONS

Simplified regulations for private pilots, non-air carrier operations, and air traffic.

The Civil Aeronautics Board has authorized the Safety Bureau to submit the attached drafts of the proposed Parts 20, 43 and 60 of the Civil Air Regulations for further comment. These Parts have been previously circulated for preliminary comment. The attached proposals reflect the benefit of the vast amount of constructive criticism that has been received and are now submitted for your further consideration before final action is taken. The adoption of these Parts in their final form will represent the completion of the first phase of the Board's announced project of simplifying and rationalizing the entire Civil Air Regulations. The particular items which have been further modified are as follows:

PART 20

(1) Education. The present proposal differs from the previous release in that it requires an applicant for a private pilot certificate to be able to read and understand the English language. It is considered essential to safe piloting of aircraft that a pilot be able to read aeronautical charts, notices to airmen, etc.

(2) Physical standards. The comment in respect to the previous proposal that the standards for the student and private pilot be relaxed both with respect to physical qualifications and periodic examination indicates a considerable difference of opinion between the pilot group and the medical group, as well as within the pilot group itself. The matter is under intensive study and an objective research program is under way which we hope will furnish substantiating evidence upon which to make these changes. In order not to delay putting in effect the general revision of this Part, the present medical requirements are being retained for the time being.

(3) Aeronautical experience. Although the comment with respect to the proposed elimination of a specific requirement for 8 hours of dual instruction prior to first solo indicates considerable difference of opinion on this point, a substantial amount of the comment also reveals a misunderstanding of the exact nature of the proposal. It is pointed out again that the requirement for a total of 10 hours of dual instruction prior to application for a private pilot certificate will eliminate any advantage which might be gained by an unusually early first solo flight. It is agreed that the latter would be the case if there were no fixed amount of dual time required.

(4) Aeronautical skill. After further study the requirement for spins in the flight test for a private pilot has been eliminated. The general desirability of this has been indicated by the large amount of comment received on the subject. Our present proposal now includes a provision for dual instruction in spins prior to application for a private pilot certificate. In addition, the flight test now includes a demonstration of ability to maneuver at minimum controllable speed and to recover from power-on and power-off stalls entered from both straight flight and turns. We believe that the proposed required maneuvers will adequately demonstrate the ability of a private pilot to fly safely.

(5) Horsepower ratings. There was considerable diversity of opinion with respect to the method by which aircraft ratings should be determined. One popular suggestion was for a rating based on wing loading. Another suggestion was that the determination as to which of several categories an aircraft would fall into be made at the time of certification. This latter determination would be based upon wing loading, horsepower, complexity of controls, etc. An examination of the characteristics of several aircraft in current use indicates that wing loading alone is not an adequate indication of the measure of pilot skill required for safe operation. Furthermore, a rating based upon a combination of wing loading, horsepower, and other characteristics would result in a system so complex as to be difficult to administer. When the change was made from the arbitrary weight classification to the horsepower rating system, the above possibilities, together with several others, were thoroughly explored and it was concluded at that time as it is now that the present system provided adequate separation from the standpoint of safety, particularly in view of its relative simplicity. However, this matter is still being left open for further discussion and the Board will be glad to receive specific suggestions for a more appropriate rating system.

(6) Instrument rating. It is now proposed to increase the requirements for an instrument rating to 40 hours, of which at least 20 must have been in actual flight. This is proposed for two reasons. In the first place, experience indicates that the present requirements are much lower than actual practice has shown to be necessary in order to be able to qualify for an instrument rating. In the second place, in view of the great increase in traffic under instrument conditions, it is necessary that all pilots be thoroughly competent in order to assure a safe and expeditious flow of traffic along the airways.

(7) Instructor ratings. Recommendations have been received with respect to the desirability of providing for two classes of instructors. Under this suggestion the lower class would be eligible to instruct students who had already been endorsed for first solo but could not instruct students prior to that time except under the direct supervision of the higher class instructor. Furthermore, endorsement for first solo could be given only by the higher class instructor although it might result from the spot checking of a student who had actually received his training from a lower class instructor under the former's supervision. The qualifications for the lower class would probably be essentially those for the present instructor rating while

the higher class rating would be issued to a pilot with, for example, 500 hours flight instructor time and after an appropriate oral examination by an inspector and upon the recommendation of an instructor holding the higher class rating. Existing instructors with the required amount of experience would be eligible to apply for the higher class rating. Although it is not proposed to incorporate such changes at the present time, comment at this time is particularly desired as to the advisability of such a proposal.

PART 43

(8) Airworthiness certificate duration. The requirements for the duration of an airworthiness certificate have been somewhat modified from the previous proposal. Instead of expiring at the end of twelve calendar months if not properly endorsed, the certificate would now continue in effect, but the aircraft could not be operated unless within that period it had been given a periodic inspection by a mechanic designated for that purpose by the Administrator.

(9) Aircraft and engine logbooks. The proposed requirement would permit the maintenance of the record of aircraft flight time and engine running time by means of either the usual logbook or any approved mechanical device.

(10) Required instruments and equipment. Part 04 of the Civil Air Regulations specifies the equipment required for the original certification of aircraft. It is now proposed to list in Part 43 only that equipment required to be in operating condition for the particular type of operation involved. Provision is also made for flight under general flight rules, day, to a point where repair or replacement can be made with any required instrument inoperative. A distinction is made between personal flight and those carrying pay passengers in the case of general flight rules, day or night. In the case of instrument flight, no such distinction is made because the safety of other traffic is involved regardless of whether or not passengers are carried.

(11) Pilot logbooks. It is proposed to require the logging of only such time as necessary in order to substantiate recent experience or qualification for other certificates or ratings.

(12) Instrument flight. Two changes have been proposed with respect to the recent experience requirements for instrument flight. The first would increase from the present two hours to six hours the time required within the preceding six calendar months. Available evidence indicates that two hours is insufficient time within which to maintain instrument competency. The second would permit three of the required six hours to be accumulated in training equipment approved by the Administrator rather than in actual flight.

PART 60

(13) "General" and "instrument" flight rules. Particular attention is directed to the rearrangement of air traffic rules under the headings "general flight rules" and "instrument flight rules", eliminating the presently used term "contact flight rules."

(14) Aerobatics. While proposed previously that no specific requirement be included with respect to aerobatics, considerable comment indicates the desirability of retaining certain of these limitations.

(15) Minimum safe altitudes. Comment indicates the general desirability of retaining minimum altitudes over certain specific areas. For example, there seems to be no justification for low flying over congested areas, except when necessary for taking off and landing. Neither is there justification for flying within 500 feet of any place of human habitation.

(16) Weather minimums. One of the most controversial items in the previously circulated proposals was the weather minimums. A preponderance of the comment indicates a desire for less restrictive weather minimums, particularly off airways. Accordingly, the proposed requirements have been revised in a manner which it is believed will provide adequate safety while permitting greater freedom of flying. Whereas the present weather minimums are based upon visibility and ceiling, it is now proposed to base the minimums upon visibility and proximity to clouds, with no reference to ceiling.

With respect to visibility, no changes are proposed within a control zone except that flight may be cleared by the tower, irrespective of visibility. For flight off airways, or on airways below 1,000 feet, a minimum of one mile is provided. For flight on airways above 1,000 feet the minimum is three miles, except that with visibility down to one mile a traffic clearance may be given for flight under general flight rules without the necessity for a pilot instrument rating.

Except within control zones, flight below 1,000 feet is subject to no more restrictions on airways than off airways.

With respect to proximity to clouds, the present requirements of 500 feet vertically and 2,000 feet horizontally apply everywhere for flight above 800 feet, and in a control zone they apply at any altitude. A control tower or control center may issue a traffic clearance authorizing flight under general flight rules in a control zone, or in a control area above 1,000 feet, at less than these minimums.

Your comment is particularly requested as to the desirability of presenting the weather minimums in chart form rather than in the usual narrative form.

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The Board has authorized the circulation of the attached proposed Parts to interested persons and solicits the submission of comments as to the desirability or undesirability of their adoption. Comments should be submitted in writing to the Civil Aeronautics Board, Washington 25, D. C., on or before December 30, 1944.

/s/ Jesse W. Lankford
Jesse W. Lankford
Director, Safety Bureau

November 10, 1944

PROPOSED REVISION OF PART 20 - PILOT CERTIFICATES

20.0 Issuance of certificate and ratings.
20.1 Student pilot rating.
20.2 Private pilot rating.
20.3 Commercial pilot rating.
20.4 Aircraft, flight instructor, and instrument ratings.
20.5 Certification rules.
20.6 Examinations and tests.

Airline transport pilot certificates and lighter-than-air pilot certificates are provided for in Parts 21 and 22.

20.0 ISSUANCE OF CERTIFICATE AND RATINGS

20.00 Certificate. A pilot certificate will be issued by the Administrator to a responsible applicant who meets the minimum requirements prescribed herein for any one of the following classes:

(a) student pilot,
(b) private pilot,
(c) commercial pilot.

20.01 Rating record. A rating record with one or more of the following ratings will be issued by the Administrator in connection with the pilot certificate. The pilot classification, the type of aircraft, the airplane class and horsepower rating, and such ratings as entitle the holder to instruct students or to pilot aircraft under instrument conditions will be prescribed on the rating record.

20.1 STUDENT PILOT RATING

20.10 Age.

(a) Powered aircraft - 16 years.
(b) Gliders - 14 years.

If an applicant is less than 21 years of age at the time of making application, he must submit with his application the written consent of either parent or legal or natural guardian to the issuance of the pilot certificate sought.

20.11 Citizenship.

(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.

20.12 Education. An applicant who is unable to read and understand the English language must have an appropriate operation limitation entered on the student pilot certificate.

20.13 Physical standards.

(a) Applicant for a powered aircraft student pilot rating must meet the physical standards of the third class prescribed in Part 29.

(b) Applicant for a glider student pilot certificate must certify that he has no physical defect which renders him incompetent to pilot a glider.

20.14 Aeronautical knowledge. No requirement. However, a student pilot, prior to the first solo cross-country flight in powered aircraft, must pass a written examination on the pertinent provisions of Part 43 and those of Part 60 dealing with general flight rules and on safety practices and procedures. In addition he must demonstrate his ability to interpret aeronautical charts.

Note: A pamphlet covering all the information necessary for this examination will be furnished each applicant.

20.15 Duration. A student pilot rating will continue in effect for 24 months from the date of issuance unless suspended or revoked.

20.2 PRIVATE PILOT RATING

20.20 Age.

(a) Powered aircraft - 16 years.
(b) Gliders - 14 years.

20.21 Citizenship.

(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.

20.22 Education. The applicant must be able to read and understand the English language. A citizen of Puerto Rico need not meet these requirements, but in any such case appropriate operation limitations may be entered on his airman rating record.

20.23 Physical standards.

(a) Applicant for a powered aircraft rating must meet the physical standards of the third class prescribed in Part 29.

(b) Applicant for a glider rating must certify that he has no physical defect which renders him incompetent to pilot a glider.

20.24 Aeronautical knowledge.

(a) Applicant for a powered aircraft rating must have passed the written examination prescribed in § 20.14.

(b) Applicant for a glider rating who does not have a powered aircraft rating must pass a written examination on those sections of Part 60 dealing with general flight rules.

20.25 Aeronautical experience.

(a) Applicant for a powered aircraft rating must have logged 10 hours of dual flight time and 30 hours of solo flight time in three-control aircraft, including instruction in recovery from spins, or 7 hours of dual flight time and 20 hours of solo flight time in two-control nonspinnable airplanes. At least 5 hours must have been logged within the 60 days immediately preceding the date of application. As part of the foregoing requirements the applicant must have logged at least 3 hours of solo cross-country flying including one flight to a point not less than 50 miles distant from the point of departure with at least 2 full-stop landings at different points along the course.

(b) A graduate of the private pilot course of a certificated flying school will be deemed to have met the requirements of this section if he presents his certificate of graduation and makes application within 30 days after graduation date.

(c) An applicant for a glider rating must have logged at least 100 gliding flights, 25 of which must have included a 360-degree turn and at least 5 of such 25 flights must have been made within the 60 days immediately preceding the date of application.

20.26 Aeronautical skill.

(a) Applicant for a powered aircraft rating must demonstrate his ability to competently perform the following maneuvers:

(1) A series of 3 landings from an altitude not to exceed 1,000 feet with engine throttled and a 180-degree change in direction, the aircraft touching the ground in normal landing attitude within 150 feet either side of a designated mark. At least one landing must be accomplished from a forward slip;

(2) 3 moderately-banked figure eights either "on pylon" or "around pylon," variation in altitude not to exceed 200 feet;

(3) a 720-degree power turn in each direction in a banked attitude of not less than 60 degrees, variation in altitude not to exceed 200 feet;

(4) maneuvers at minimum controllable speeds and recovery from power-on and power-off stalls entered from straight flight and turns; and

(5) When the applicant's medical certificate shows a structural defect or limitation, such additional maneuvers and tests as may be found necessary by the Administrator to demonstrate the competency of the applicant to pilot aircraft safely. A pilot certificate issued under these circumstances may be limited to the operation of a particular aircraft and to the type of operation.

Any of the above required maneuvers may be modified or eliminated if such action is appropriate to the characteristics of the aircraft used in the test and appropriate operation limitations are entered on the rating record.

(b) Applicant for a glider rating must demonstrate his ability to competently perform the following maneuvers:

(1) one flight with a 180-degree turn and a down-wind landing;

(2) 2 flights with a 360-degree turn to right and left, respectively, landing each time at a point not more than 100 feet either side of a designated mark;

(3) 2 flights with right and left turns in each flight.

20.3 COMMERCIAL PILOT RATING

20.30 Age. 18 years.

20.31 Citizenship. Applicant for a powered aircraft or glider rating must 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. A certificate may be issued to an applicant who is a citizen of a friendly foreign government which does not grant reciprocal privileges. The effectiveness of such certificate shall in any event terminate 6 months after the war and may be terminated by the Administrator at any time without notice. Upon application to the Administrator the war limitation clause may be removed whenever the government of the country of which he is a citizen grants the reciprocity required in this section.

20.32 Education. Applicant must be able to read, write, speak, and understand the English language.

20.33 Physical standards.

(a) Applicant for a powered aircraft rating must meet the physical standards of the second class prescribed in Part 29.

(b) Applicant for a glider rating must certify that he has no physical defect which renders him incompetent to pilot a glider.

20.34 Aeronautical knowledge.

(a) Applicant for a powered aircraft rating must pass a written examination covering such of the provisions of Parts 01, 20, 43, and 60 as are pertinent; meteorology as applied to the recognition of weather conditions while flying, the analyzing of weather maps and sequence reports furnished by the United States Weather Bureau; practical air navigation problems including the use of maps, navigation by terrain, by dead reckoning, and the use of navigational instruments and aids; the theory and practice of flight; the maintenance of aircraft and the maintenance and use of aircraft powerplants in common use.

(b) Applicant for a glider rating must pass a written examination on such of the provisions of Parts 01, 20, 43, and 60 as are pertinent or hold a powered aircraft rating.

20.35 Aeronautical experience.

(a) Applicant for a powered aircraft rating must have logged at least 200 hours of solo flight time of which at least 5 hours must have been logged within 60 days immediately preceding the date of application. As part of the foregoing requirements the applicant must have logged at least 10 hours of solo cross-country flying, including at least one flight to a point not less than 100 miles distant from the point of departure with 3 full-stop landings at different points on the course.

(b) A graduate of the commercial pilot course of a certificated flying school will be deemed to have met the requirements of this section if he presents his certificate of graduation and makes application within 30 days after graduation date.

(c) Applicant for a glider rating must have logged at least 250 gliding flights or 200 gliding flights and 5 hours of gliding or soaring. At least 5 of such flights must have been made within 60 days preceding the date of application. Applicant must also have had at least one hour of instruction in recovery from stalls and spins in a conventional airplane of not more than 1,500 pounds maximum authorized weight. An applicant who is the holder of a rating for powered aircraft who has logged not less than 100 gliding flights or 5 hours of gliding or soaring solo flying time will be deemed to have met the requirements of this section.

20.36 Aeronautical skill.

(a) Applicant for a powered aircraft rating must demonstrate his ability to perform competently the following maneuvers:

(1) a series of 3 landings from an altitude not to exceed 1,000 feet with engine throttled and a 180-degree change in direction, the aircraft touching the ground in normal landing attitude within 100 feet either side of a designated mark. At least one landing must be accomplished from a forward slip;

(2) a spiral in each direction of not less than 3 full turns in a banked attitude of not less than 60 degrees, with engine throttled;

(3) 3 shallow figure eights either "on pylon" or "around pylon," 3 steep figure eights either "on pylon" or "around pylon," and one 720-degree power turn in each direction in a banked attitude of at least 60 degrees. During each of these maneuvers the total variation in altitude shall not exceed 100 feet;

(4) a two-turn spin in each direction with a recovery error of not more than plus or minus 10 degrees;

(5) coordination exercises, straight climbs, climbing turns, slips, and emergency maneuvers such as simulated forced landings and recovery from stalls entered from both level and steeply banked attitudes.

Any maneuver provided for in this section may be modified or eliminated by the examining inspector if such action is appropriate to the characteristics of the aircraft used in the test and appropriate operation limitations are entered on the rating record.

(b) Applicant for a glider rating must demonstrate satisfactorily his ability to perform competently the following maneuvers:

(1) one flight with a 180-degree turn and down-wind landing;

(2) two flights with a 360-degree turn to right and left, respectively, landing each time at a point within 50 feet either side of a designated mark;

(3) two flights with right and left turns in each flight.

20.4 AIRCRAFT, FLIGHT INSTRUCTOR, AND INSTRUMENT RATINGS

20.40 Aircraft rating competence. Applicant for additional aircraft ratings, subsequent to the original issuance of a pilot certificate and rating record, must demonstrate competence in the type of aircraft and, in the case of an airplane, the class and horsepower range for which the rating is sought. A pilot limited by his rating record to two-control nonspinnable airplanes applying for a rating for three-control spinnable airplanes must have logged at least 30 solo hours and must demonstrate his ability to enter and recover from spins.

20.400 Aircraft type rating. The types of aircraft for which ratings may be issued are as follows:

(a) airplane,
(b) autogiro,
(c) helicopter,
(d) glider.

20.401 Airplane class rating. The classes of airplanes for which ratings may be issued are as follows:

(a) single engine land,
(b) single engine sea,
(c) multiengine land,
(d) multiengine sea,
(e) unconventional.

20.402 Airplane horsepower rating. The range of horsepower of airplanes which will be included in the rating issued is as follows:

(a) 130 or less horsepower, if competence has been demonstrated in airplanes certificated for a maximum-except-take-off of 130 or less horsepower;

(b) except where paragraph (a) is applicable, a range of horsepower extending from 50 per cent less than to 50 per cent greater than the total certificated maximum-except-take-off horsepower of the airplane in which competency was demonstrated;

(c) a continuous range extending from the lowest to the highest horsepower for which applicant has qualified.

20.403 Application of multiple class and horsepower ratings. The horsepower rating applies to all airplane class ratings. An applicant who has demonstrated competence in both single and multiengine landplanes and seaplanes may be rated for all airplane classes except unconventional.

20.41 Flight instructor rating.

20.410 Age. 18 years.

20.411 Knowledge. Applicant must have a practical and theoretical knowledge of flight instruction and pass a written and practical examination thereon.

20.412 Experience. Applicant may be a commercial or private pilot but in the latter case he must meet the requirements of § 20.35(a) or (b).

20.413 Skill. Applicant must pass a flight test demonstrating his ability to perform with precision and to teach such flight maneuvers as are necessary and appropriate for instruction in the safe piloting of aircraft.

20.42 Instrument rating.

20.420 Knowledge. Applicant must pass a written examination demonstrating his familiarity with the use of such instruments and other navigational aids, both in the aircraft and on the ground, as are necessary for the navigation of aircraft by instruments. In addition an applicant who is a private pilot must meet the knowledge requirements of § 20.34(a).

20.421 Experience. Applicant may be a commercial or private pilot but in the latter case must meet the requirements of § 20.35(a) or (b). As part of the experience requirements, he must have logged at least 40 hours of instrument flight under actual or simulated instrument flight conditions, not less than 20 hours of which must have been in actual flight,

20.422 Aeronautical skill. Applicant shall satisfactorily accomplish solely by reference to instruments a flight test of the following maneuvers:

(a) straight and level flight,
(b) moderately banked 180-degree and 360-degree turns in both directions,
(c) minimum glides and maximum climbs and approaches to stalled attitudes of flight,
(d) climbing turns,
(e) stalls, skids, slips, spirals, and banks in excess of 45 degrees,
(f) a demonstration of estimated arrival time, taking into account speed, wind, and drift.

20.423 Radio skill. Applicant must demonstrate his competence while flying under instrument conditions with respect to the following items:

(a) tuning radio,
(b) orientation,
(c) operation along a radio range leg,
(d) locating cone of silence,
(e) letting down toward the range station using the approved instrument approach procedure for the particular airport.

20.5 CERTIFICATION RULES

20.50 Application. Application for a pilot certificate or any rating must be made on a form prescribed and furnished by the Administrator. If an applicant applies as a graduate of a course of flight instruction approved by the Administrator the application must be accompanied by a certificate from the school or from the applicant's instructor made on a form furnished by the Administrator.

20.51 Duration. A pilot certificate other than a student pilot certificate will continue in effect until suspended, or revoked, or a termination date is fixed by the Board.

20.52 Display. A pilot certificate and rating record must be kept in the possession of the pilot at all times when piloting an aircraft, and must be presented for inspection upon the request of any passenger, any authorized officer or employee of the Administrator or Board, or any State or municipal officials charged with the duty of enforcing local laws or regulations.

20.53 Surrender. The holder of a pilot certificate must, upon request, surrender such certificate to the Administrator, if it has been suspended or revoked.

20.54 Exchange of certificates. A pilot certificate which was effective on or after January 1, 1942, unless suspended or revoked, must be exchanged for a pilot certificate and appropriate ratings within 6 months after the effective date of this Part, except that any pilot serving in the armed forces of the United States may make such exchange within 6 months after date of discharge.

20.55 Identification card. An identification card is a part of a pilot certificate and must be kept in the personal possession of the pilot at all times when piloting aircraft. Such a card will be issued by the Administrator and will contain the pilot's fingerprints, picture, and signature or it may be a document issued by the Army, Navy, Marine Corps, or Coast Guard identifying the pilot as a member thereof.

Note: This requirement will be deleted after the war.

20.56 Military competence.

20.560 Pilot certificate. An applicant who is, or was within the preceding 12 calendar months, a member of the armed forces of the United States and has served on pilot flying status for a period of 6 consecutive months shall be deemed to have met the aeronautical knowlege, experience, and skill requirements of the Civil Air Regulations for the issuance of a pilot certificate appropriate to the military pilot rating held: Provided, That he passes a written examination on Parts 20, 43, and 60 of the Civil Air Regulations and submits reliable documentary evidence showing:

(a) that he is a member of the armed forces or that he has been honorably discharged or returned to inactive status,
(b) that he is, or was, a rated military pilot, and
(c) his total solo flying time.

20.561 Aircraft ratings. Type, class, and horsepower ratings will be issued in connection with such a pilot certificate or in connection with a private or commercial pilot certificate held by the applicant, if he presents reliable documentary evidence showing that within the preceding 12 calendar months he has had at least 10 hours of flying time during which he was the sole manipulator of the controls of aircraft of the type, class, and horsepower for which a rating is sought.

20.6 EXAMINATIONS AND TESTS

20.60 General. The examination and tests prescribed herein will be conducted by the Administrator or by a person designated for the purpose by the Administrator.

20.61 Physical examination. Within 12 calendar months immediately preceding the giving of the tests and examinations set forth herein, the applicant shall have passed satisfactorily the physical examination prescribed in Part 29 for the original issuance of a pilot certificate of the class for which application is made.

20.62 Aircraft used in flight tests. The applicant must furnish a certificated aircraft which must be equipped with complete dual controls and parachutes for both the applicant and the inspector.

20.63 Passing grade. A passing grade of at least 70 per cent must be accomplished on each flight maneuver and on each subject of written examinations.

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

20.65 Reexamination. Applicants who have failed in any examination will be subject to the following rules in making application for reexamination:

(a) An applicant for a pilot certificate with a powered aircraft rating or for an additional rating who fails to pass any prescribed theoretical examination may reapply after the expiration of 30 days from the date of such failure or after he has received not less than 5 hours of instruction on each subject failed from a certificated ground instructor.

(b) An applicant for a pilot certificate with a powered aircraft rating or for an additional rating who has failed to pass any prescribed practical examination or test may reapply only after he has logged at least 6 additional hours of flight time under the supervision of an instructor holding the appropriate rating and after the instructor has certified in the applicant's logbook that he considers such applicant qualified for the rating sought.

(c) An applicant for a glider rating who has failed to pass any prescribed theoretical examination may reapply at any time after the expiration of 30 days or after he has received not less than 5 hours of instruction on each subject failed from a certificated ground instructor.

(d) An applicant for a glider rating who has failed to pass any prescribed practical examination or test may reapply only after he has made at least 20 additional gliding flights.

REVISED PROPOSED
PART 43 - NON-AIR CARRIER OPERATION RULES

43.0 General.

43.1 Aircraft certification and identification.
43.10 Certificates and identification marks.

43.2 Maintenance.
43.20 General.
43.21 Periodic inspection.
43.22 Aircraft and engine records.
43.23 Rebuilt engine logbook.

43.3 Aircraft equipment.
43.30 Required instruments and equipment.

43.4 Operating rules (general).

43.5 Student pilot limitations.
43.50 General limitations.
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43.52 Flight area limitations.
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43.6 Private and commercial pilot limitations.
43.60 Private pilot.
43.61 Commercial pilot.
43.62 Airline transport pilot.
43.63 Rating record requirements.
43.64 Flight instruction limitations.
43.65 Instrument flight limitations.
43.66 Instrument instruction.
43.67 Simulated instrument flight.

43.0 GENERAL

43.00 Scope. The following rules govern the operation of non-air carrier civil aircraft in the United States. Aircraft used exclusively in the governmental service, including military aircraft, are not considered civil aircraft.

43.1 AIRCRAFT CERTIFICATION AND IDENTIFICATION

43.10 Certificates and identification marks. Aircraft, except foreign aircraft authorized by the Administrator to be flown in the United States, must not be operated unless the following requirements are met:

43.100 Registration certificate. A registration certificate issued to the owner of the aircraft must be displayed in the aircraft at all times. (For rules governing the registration and recordation of ownership of aircraft see Administrator's Regulations 501 and 503.)

43.101 Airworthiness certificate. An airworthiness certificate or special authorization, issued by the Administrator, approving its operation must be carried in the aircraft at all times during flight.

Note: As a general rule the manufacturer obtains the airworthiness certificate which thereafter remains with the aircraft. If no airworthiness certificate has been issued for the aircraft, or if it has expired, the owner must obtain this certificate.

43.1010 Duration. An airworthiness certificate shall remain in effect until its termination date is fixed by the Board or until it is lawfully suspended or revoked.

43.1011 Transferability. The airworthiness certificate and the attached currently effective aircraft operation record, upon transfer of ownership, must remain with the aircraft for which they were issued.

43.1012 Surrender. Upon the cancellation, suspension, or revocation of an airworthiness certificate the owner of the aircraft must, upon request, surrender such certificate to an authorized representative of the Administrator.

43.1013 Operations record. An operations record, which shall specify the operating limitations of a particular aircraft, shall be issued by the Administrator. The operations record must be attached to the airworthiness certificate. The aircraft must not be flown except within the limitations specified therein. Any modification to the aircraft which affects the limitations set forth in the operations record must be made under the supervision of an appropriately rated mechanic or other person authorized by the Administrator and such change must be noted in the operations record.

43.102 Identification marks. Aircraft identification marks must be displayed on aircraft in a manner prescribed by the Administrator. They are as follows:

(a) NC. An aircraft which has fully complied with the minimum airworthiness requirements specified in the Civil Air Regulations must display the Roman capital letters NC followed by the registration number.

(b) NR. An aircraft which the Administrator has found to be safe for restricted operations must display the Roman capital letters NR followed by the registration number.

(c) NX. An aircraft which the Administrator has found to be safe for experimental operations must display the Roman capital letters NX followed by the registration number.

(d) Other marks or symbols. No other design, mark, or symbol which modifies or confuses the identification mark may be placed on aircraft, except with the approval of the Administrator.

43.1020 Export aircraft. An aircraft manufactured in the United States for delivery outside the United States or its possessions shall display such identification marks or insignia as are approved by the Administrator. Such aircraft may be operated only for the purpose of test and demonstration flights for a limited period of time or while in transit to the purchaser.

43.2 MAINTENANCE.

43.20 General. An aircraft must not be flown unless it is in airworthy condition.

43.21 Periodic inspection. An aircraft must not be flown unless within each 100 hours of flight time or within the preceding 12 calendar months, whichever period comes first, it is given a periodic inspection as prescribed by the Administrator and is found to be airworthy by a certificated mechanic. At least one such inspection shall be made by a representative of the Administrator designated for such purpose within the 12 calendar months preceding the date of flight, and a copy of this report attached to the operations record.

43.22 Aircraft and engine records. The registered owner must keep accurate, current, permanent records of the total flight time of the aircraft and the running time of each engine. Such records must be kept in logbooks or other suitable systems readily available for transfer with the aircraft or individual engine and, upon request, must be presented to an authorized representative of the Administrator or Board. A mechanical device approved by the Administrator which records flight time may be used in lieu of logbooks.

43.23 Rebuilt engine logbooks. A new record without previous operating history may be used for an aircraft engine rebuilt by the manufacturer or any agency approved by the manufacturer for such work, provided such new record contains a signed statement by such manufacturer or agency giving the date the engine was rebuilt and such other information as the Administrator may require.

43.3 AIRCRAFT EQUIPMENT.

43.30 Required instruments and equipment. Aircraft must not be flown unless the instruments and equipment listed below for the particular type of operation are in serviceable condition, except that aircraft may be flown under general flight rules (day) without pay passengers to the nearest point where repairs or replacement may be made, with any of the instruments and equipment inoperative. An aircraft carrying pay passengers under general flight rules (day) and any aircraft being flown under night or instrument conditions, with or without passengers, must land either at the nearest suitable landing area or at the next point of intended landing, whichever is the safer procedure, if any of the instruments or equipment listed below become unserviceable in flight.

43.300 General flight rules (day).

(a) Without pay passengers:

(1) an airspeed indicator,
(2) a tachometer for each engine,
(3) an oil pressure gauge for each engine where pressure system is employed,
(4) a liquid thermometer for each liquid-cooled engine,
(5) an oil thermometer for each air-cooled engine,
(6) a manifold pressure gauge, or equivalent, for each engine when operating limits are specified.

(b) With pay passengers. All items listed in paragraph (a) and:

(1) an altimeter,
(2) a fuel quantity gauge indicating the amount of fuel in each tank,
(3) a magnetic compass, except for local flight,
(4) approved flotation gear for each occupant and a Very pistol or equivalent signal device, if the aircraft is operated for hire over water beyond power-off gliding distance from shore.

43.301 General flight rules (night).

(a) Without pay passengers. All items listed in § 43.300 and a set of certificated forward position lights in combination with a certificated tail light.

(b) With pay passengers. All items listed in §§ 43.300, 43.301(a), and:

(1) one electric landing light,
(2) a minimum of certificated landing flares specified as follows for operations beyond a three-mile radius from the center of the airport of take-off:

Maximum authorized weight of aircraft	Flares
2,000 pounds or less	5 class-three or 3 class-two
above 2,000 pounds	2 class-one or 3 class-two and 1 class-one

43.302 Instrument flight rules (day).

(a) All items in § 43.300, whether or not with pay passengers, and:

(1) a radio transmitter operating on 3,105 kilocycles to permit communication at a distance of at least 100 miles,
(2) a radio receiver capable of receiving radio range and weather broadcasts,
(3) a gyroscopic rate-of-turn indicator. (All air-driven gyroscopic instruments must derive their energy from a suction air pump driven either by an engine or an auxiliary power unit),
(4) a bank indicator,
(5) a rate-of-climb indicator,
(6) a sensitive altimeter adjustable for change in barometric pressure and compensated for changes in temperature,
(7) a clock with a sweep-second hand, and
(8) a gyroscopic compass.

43.303 Instrument flight rules (night). All items in §§ 43.300, 43.301, and 43.302, whether or not with pay passengers.

43.4 OPERATING RULES (GENERAL)

43.400 Definitions.

(a) A pilot is a person holding a valid pilot certificate issued by the Administrator.

(b) To pilot means to be in command of the aircraft during take-off, in flight, or landing.

(c) Passenger is an occupant of the aircraft in flight other than a crew member.

(d) Flight instructor means a private or commercial pilot who possesses a valid flight instructor rating.

43.401 Pilot certificate. Any person piloting an aircraft in the United States must hold a valid pilot certificate issued by the Administrator or a foreign pilot certificate validated by the Administrator.

43.402 Periodic physical examination. A person shall not pilot an aircraft unless he has a medical certificate or other evidence satisfactory to the Administrator, showing that within the preceding 12 calendar months he has met the physical requirements for his present rating classification.

43.403 Pilot logbooks. A record of the flight time used to substantiate recent experience or qualification for certificates or ratings shall be kept in a bound logbook. Such record shall show:

(a) date of flight,

(b) type, make, and model of the aircraft flown, the airplane class and engine horsepower,

(c) aircraft identification mark,

(d) dual instruction endorsed by a rated instructor, solo, instrument, and night flying time,

(e) duration of flight, and the points between which such flight was made.

43.404 Logging of flight time.

(a) Student pilot. A student pilot may log as solo only that time during which he is the sole occupant of the aircraft in flight.

(b) Pilots of private class or higher. A pilot of private class or higher may log as solo that portion of any flight during which he is the sole manipulator of the controls of an aircraft for which he is rated or any flight during which he is the sole occupant of the aircraft. A flight instructor also may log as solo all that flight time during which he is serving as flight instructor.

(c) Instrument time. Instrument flight time may be logged as such by the pilot actually manipulating the controls and only when the aircraft is flown solely by reference to instruments either under actual or simulated instrument flight conditions.

43.405 Recent experience requirements.

43.4050 Passenger flight.

(a) Day. A pilot must not pilot an aircraft carrying any passenger unless, within the preceding 3 calendar months, he has made and logged at least 5 take-offs and 5 landings to a full stop in an aircraft of the same type and class.

(b) Night. A pilot must not take off or land an aircraft carrying passengers during the hours of darkness unless he has made and logged at least 5 take-offs and 5 landings to a full stop during the hours of darkness within the preceding 3 calendar months.

43.4051 Instruction flight. A flight instructor must not give certified flight instruction unless within the preceding 12 calendar months he has either:

(a) given at least 10 hours of flight instruction while appropriately rated, or

(b) has demonstrated to the Administrator his continued proficiency.

43.4052 Instrument flight. A pilot shall not pilot an aircraft under instrument flight rules unless he has had at least 6 hours of instrument flight during the preceding 6 calendar months or until he has logged 6 hours of such flight time under:

(a) actual instrument conditions, accompanied by a pilot of at least private class holding an appropriate aircraft and instrument rating,

(b) simulated instrument conditions in an aircraft, accompanied by a pilot of at least private class holding an appropriate aircraft rating, or

(c) simulated instrument conditions in equipment approved by the Administrator, except that at least 3 hours must have been logged in accordance with paragraph (a) or (b).

43.406 Use of liquor, narcotics, and drugs. A pilot or member of the aircraft crew in flight must not be under the influence of intoxicating liquor or use any drug which affects his faculties in any manner contrary to safety. A pilot must not permit any person to be carried in the aircraft who is obviously under the influence of intoxicating liquor or drugs, except a medical patient under proper care or in case of emergency.

43.407 Towing by aircraft. A pilot must not tow any object by aircraft unless authorized by the Administrator.

43.408 Dropping objects or things. A pilot must not permit any object or thing to be dropped from an aircraft in flight except fine sand, fine lead shot, fuel, or water, all unconfined, unless authorized by the Administrator.

43.409 Acrobatic flight. A pilot must not intentionally fly an aircraft in acrobatic flight:

(a) carrying a pay passenger,

(b) carrying any other person unless all occupants are equipped with approved parachutes, or

(c) carrying any person seated at operative dual controls other than a private or higher class pilot or a student receiving flight instruction.

43.410 Parachutes. The pilot must not permit other than an approved parachute that has been packed within the preceding 60 days by a certificated parachute rigger to be carried in the aircraft in a manner available for emergency use.

43.5 STUDENT PILOT LIMITATIONS

43.50 General limitations. A student pilot must not pilot an aircraft carrying a passenger and must not pilot aircraft for hire or reward or in furtherance of a business.

43.51 Requirement for first solo. A first solo flight must not be made until the student is found competent by a flight instructor to make such flight and authority therefor has been endorsed by such instructor on the student pilot certificate.

43.52 Flight area limitations. A student pilot must not pilot an aircraft outside a local flying area designated by his flight instructor until:

(a) he has logged at least 10 solo flight hours;
(b) he has passed the written examination required in Part 20 of the Civil Air Regulations for cross-country flight; and
(c) his student pilot certificate has been appropriately endorsed by a flight instructor.

43.53 Aircraft limitations. A student pilot must not pilot an aircraft other than that of the type, class, and horsepower range which has been endorsed on his student pilot certificate by a flight instructor.

43.54 Recent experience. A student pilot who has not piloted an aircraft within 90 days must not pilot aircraft in solo flight until he has passed a satisfactory flight check given by a flight instructor and that fact has been endorsed by such instructor on the student pilot certificate.

43.6 PRIVATE AND COMMERCIAL PILOT LIMITATIONS

43.60 Private pilot. A private pilot must not pilot aircraft for hire.

Note: The sharing of expenses incurred during flight is permitted under the terms of this section.

43.61 Commercial pilot. A commercial pilot may exercise the privilege of a private pilot and in addition may pilot aircraft carrying passengers or property for hire or reward or in furtherance of a business.

43.62 Airline transport pilot. An airline transport pilot may exercise the privileges of a commercial pilot with an instrument rating.

43.63 Rating record requirements. A private or higher class pilot must not pilot an aircraft unless there is attached to his pilot certificate the appropriate rating record issued by the Administrator, and he must not pilot any aircraft carrying passengers otherwise than in accordance with the limitations set forth in his rating record.

Note: § 43.63 does not permit a pilot who by reason of § 29.2 has been limited to the operation of a particular make or model of aircraft or a general type of aircraft to operate other makes or models or other general types.

43.64 Flight instruction limitations. The following rules govern flight instruction:

43.640 Aircraft. Aircraft operated in flight instruction must be equipped with fully functioning dual controls.

43.641 Flight time. A flight instructor must not give more than 8 hours of dual flight instruction in any 24-hour period and not more than 36 hours of dual-flight instruction in any 7-day period.

43.65 Instrument flight limitations. A pilot must not pilot aircraft under instrument flight rules unless he holds a valid instrument rating issued by the Administrator or a valid military instrument rating issued by his service.

43.66 Instrument instruction. Instrument flight instruction may be given only by a person holding a valid instrument rating. A flight instructor rating is not required.

43.67 Simulated instrument flight. Aircraft must not be flown under simulated instrument flight conditions unless:

(a) fully functioning dual controls are installed in the aircraft,
(b) an appropriately rated pilot occupies the other control seat as safety pilot, and
(c) such safety pilot at all times has adequate vision forward and to either side of the aircraft, or a competent observer occupies a position in the aircraft so that his field of vision adequately supplements that of the safety pilot.

November 10, 1944

PROPOSED REVISION OF PART 60 - AIR TRAFFIC RULES

60.1	General flight rules (GFR).	60.2	Instrument flight rules (IFR).
60.10	Reckless operation.	60.20	Preflight action.
60.11	Airspace restrictions.	60.21	Minimum altitudes.
60.12	Right of way.	60.22	Cruising altitudes.
60.13	Aerobatics.	60.23	Flight in control areas.
60.14	Minimum safe altitudes.	60.230	Flight plan.
60.15	On and in the vicinity of airports.	60.231	Alternate airport.
		60.232	Fuel requirements.
60.16	Traffic control instructions.	60.233	Traffic clearance.
60.17	Aircraft lights.	60.234	Communication contacts.
60.18	Weather minimums.	60.235	Communication failure.
		60.236	Notification of arrival.

The following air traffic rules apply to all aircraft operated anywhere in the United States except as otherwise noted or to the extent that they are modified by other Parts of the Civil Air Regulations governing air carrier operations.

Note: When noncompliance with any of the air traffic rules is desired for a particular activity, the Administrator may issue a certificate of waiver for a limited period of time. Application for such a waiver for a proposed air meet shall be made at least 15 days in advance.

60.1 GENERAL FLIGHT RULES (GFR)

60.10 Reckless operation. Aircraft shall not be operated in a reckless or negligent manner so as to endanger the life or property of another person.

60.11 Airspace restrictions. Areas within which the flight of aircraft is restricted are marked on current aeronautical charts and published in the Weekly Notice to Airmen. Aircraft operating within these areas shall comply with the restrictions prescribed by the agency having jurisdiction over these areas.

60.12 Right of way.

(a) Proximity. Aircraft shall be flown at least 500 feet apart except by prearrangement.

(b) Converging. When two aircraft are on crossing courses at approximately the same altitude, the aircraft on the left shall give way.

(c) Approaching head on. When two aircraft are approaching head on, or approximately so, and there is danger of collision, each shall alter its course to the right.

(d) Overtaking. An overtaken aircraft has the right of way and the overtaking aircraft whether climbing, descending, or in level flight, shall alter its course to the right.

(e) Landing. An aircraft while landing or maneuvering in preparation to land has the right of way over other aircraft in flight or on the surface. Aircraft at a higher altitude shall give way to aircraft at a lower altitude.

(f) Distress. An aircraft in distress has the right of way over all other traffic.

60.13 Aerobatics. Intentional aerobatics shall not be performed over the congested areas of cities, towns, settlements, or open air assemblies of persons, or in control zones, or when visibility from the aircraft is less than three miles.

60.14 Minimum safe altitudes. Except when necessary for taking off and landing, aircraft shall be flown:

(a) when over the congested areas of cities, towns, settlements, or open air assemblies of persons at an altitude sufficient to permit an emergency landing outside such areas or in any case at least 1,000 feet above such areas, and

(b) when elsewhere than as specified in (a), at least 500 feet in any direction from any person or place of human habitation.

60.15 On and in the vicinity of airports. Aircraft shall be operated on and in the vicinity of airports in accordance with the following rules:

(a) Prior to and during taxiing, taking off, and landing a pilot shall:

(1) observe other traffic and take precaution to avoid collision,

(2) conform to the flow of traffic, and

(3) if an airport traffic control tower is in operation, maintain contact with such tower, either visually or by radio, so as to receive any traffic control instructions which may be issued.

(b) After taking off or when approaching for landing, all turns shall be made to the left unless a different procedure has been authorized by the Administrator for the particular airport or unless otherwise instructed by a control tower.

(c) If a landing is not intended, aircraft shall be flown so as to avoid the traffic pattern formed by aircraft landing and taking off.

60.16 Traffic control instructions. An aircraft shall be operated in control areas and control zones in accordance with any traffic control instructions received from a control center or control tower.

60.17 Aircraft lights. During the hours of darkness:

(a) all aircraft in flight shall display position lights,

(b) all aircraft parked or moved within, or in dangerous proximity to, the useable portion of any airport used for, or available to, night flight operations shall be clearly illuminated or lighted, or the area marked with obstruction lights.

Note: Seaplanes on the water are required to display the lights as prescribed by regulations of the United States governing the navigation of vessels on water.

60.18 Weather minimums. Aircraft shall be flown under conditions equal to or better than the following unless operated in accordance with instrument flight rules or unless otherwise authorized by a control tower or control center:

		Inside a control zone	Outside a control zone but inside a control area	Elsewhere
Visibility	Above 1,000 feet	3 miles*	3 miles*	1 mile
	1,000 feet or below	3 miles*	1 mile	1 mile
Proximity to clouds	Above 800 feet	500 feet vertically 2,000 feet horizontally	500 feet vertically 2,000 feet horizontally	500 feet vertically 2,000 feet horizontally
	800 feet or below	500 feet vertically 2,000 feet horizontally	Clear of clouds	Clear of clouds

* When traffic conditions permit, a traffic clearance will be issued by a control tower or control center when the visibility is less than 3 miles but not less than 1 mile.

60.2 INSTRUMENT FLIGHT RULES (IFR).

60.20 Preflight action. Prior to making a flight under instrument flight rules, the pilot shall determine that the flight can be made with safety, taking into consideration current weather reports and forecasts, fuel requirements, and an alternate course of action in the event that the flight cannot be completed as planned.

60.21 Minimum altitudes. Except when necessary for taking off or landing, aircraft shall be flown more than 1,000 feet above the surface and at least 1,000 feet from any obstruction.

60.22 Cruising altitudes. Except for necessary ascent or descent aircraft shall be flown at the following cruising altitudes:

(a) Inside a control area or control zone - at altitudes authorized by the control center or control tower.

(b) Elsewhere:

1. 0° to 89° - at odd thousands of feet (1,000, 3,000, etc.)

2. 90° to 179° - at odd thousands plus 500 feet (1,500, 3,500, etc.)

3. 180° to 269° - at even thousands of feet (2,000, 4,000, etc.)

4. 270° to 359° - at even thousands plus 500 feet (2,500, 4,500, etc.)

60.23 Flight in control areas. The following rules apply to any flight within a control area or a control zone:

60.230 Flight plan. Prior to taking off from any point within or prior to entering a control area or control zone, a flight plan shall be filed with the appropriate control center or control tower unless otherwise authorized by such control center or control tower. The flight plan shall contain the following information:

(a) aircraft identification mark,
(b) type of aircraft,
(c) name of the pilot,
(d) point of departure,
(e) cruising altitude or altitudes above sea level and the route to be followed,
(f) point of first intended landing,
(g) intended cruising airspeed,
(h) time of departure,
(i) estimated elapsed time until arrival on the ground at the point of first intended landing,
(j) the alternate airport or airports, and
(k) the amount of fuel aboard (in hours of normal cruising consumption).

60.231 Alternate airport. At least one alternate airport must be specified in the flight plan where the weather reports and forecasts indicate the weather conditions will be, at the time of expected arrival, at least equal to the weather minimums required for flight under general flight rules (§ 60.18).

60.232 Fuel requirements. When the point of first intended landing lies within a control area or a control zone, sufficient fuel and oil, considering the wind and other weather conditions forecast, shall be carried:

(a) to complete the flight to the point of first intended landing, and thereafter,

(b) to fly to and land at the alternate airport designated in the approved flight plan, and thereafter,

(c) to fly at normal cruising consumption for a period of 45 minutes.

60.233 Traffic clearance. Prior to making a flight in a control area or control zone, a traffic clearance shall be obtained from the appropriate control center or control tower. No deviation shall be made from the requirements of a traffic clearance unless an emergency situation arises which requires immediate decision and action, in which case, as soon as possible after such emergency authority is exercised, the pilot shall inform the proper control center or control tower of the deviation.

60.234 Communication contacts. The pilot of an aircraft shall maintain a continuous listening watch on the appropriate radio frequency and report by radio as soon as possible to the appropriate communications station the time and altitude of passing each radio fix or check point specified in the approved flight plan, together with unanticipated or unusual weather conditions being encountered.

60.235 Communication failure. If unable to maintain two-way radio communication, the pilot shall observe one of the following procedures in the order listed:

(a) proceed according to the current flight plan, maintaining the last acknowledged assigned altitude until the approach time last authorized, at which time a landing may be made, or

(b) proceed in accordance with general flight rules, or

(c) land as soon as practicable.

60.236 Notification of arrival. After a traffic clearance has been received, the pilot shall, upon landing or upon completion of the flight as cleared, file an arrival or completion notice with the nearest communications station.