

SECTION 7. EXPERIMENTAL AMATEUR-BUILT AIRWORTHINESS CERTIFICATIONS

127. GENERAL. Under the provisions of § 21.191(g), an amateur-built aircraft is defined as an aircraft in which the major portion has been fabricated and assembled by persons who undertook the construction project solely for their own education or recreation. The applicant should be advised of the availability of AC 20-27, Certification and Operation of Amateur-Built Aircraft.

a. Eligibility.

(1) Amateur-built aircraft are eligible for an experimental airworthiness certificate when the applicant presents satisfactory evidence of the following:

- (a) The aircraft was fabricated and assembled by an individual or group of individuals.
- (b) The project was undertaken for educational or recreational purposes.
- (c) The FAA finds that the aircraft complies with acceptable aeronautical standards and practices.

NOTE: Aircraft that are manufactured and assembled as a business for sale to other persons are not considered to be in compliance with § 21.191(g).

(2) The determination of the major portion factor may be made by evaluating the amount of work accomplished by the individual or group of individuals, against the total amount of work necessary for the complete project, excluding standard procured items. The “major portion” of the aircraft is considered to mean more than 50 percent of the fabrication and assembly operations. The applicant must submit a notarized FAA Form 8130-12, Eligibility Statement, Amateur-Built Aircraft, certifying the major portion was fabricated and assembled for educational or recreational purposes, and that evidence is available to support this statement. The evidence will be provided to the ASI upon request. If a question arises as to the eligibility regarding the major portion requirement of an amateur-built aircraft, FAA Form 8000-38, Fabrication/Assembly Operation Checklist, may be used. See figure 4-14 for a sample Form 8130-12 and figure 4-15 for a sample Form 8000-38.

NOTE: Applicants will jeopardize eligibility for certification under § 21.191(g) if someone else builds the aircraft.

b. Design and Construction.

(1) To meet the intent of § 21.191(g) and to be eligible for an experimental airworthiness certificate, satisfactory evidence must be presented to show that the aircraft was not built from completely prefabricated parts or kits. However, the applicant cannot be expected to have personally fabricated every part that makes up the aircraft any more than this can be expected of a commercial aircraft manufacturer. Items such as engines and engine accessories, propellers, rotor blades, rotor hubs, tires, wheel and brake assemblies, instruments, and standard aircraft hardware such as pulleys, bell cranks, rod ends, bearings, bolts, rivets, etc., may be procured on the open market.

(2) The use of used or salvaged major assemblies (for example, wings, fuselage, empennage, etc.) from type-certificated aircraft is permitted, as long as they are in a condition for safe operation. These assemblies will be considered by the FAA in determining the “major portion,” but no credit for fabrication and assembly will be given to the builder.

(3) The FAA should be reasonable in its requests to amateur builders, keeping in mind that in most instances only one aircraft is involved. Accordingly, the builder is not required to have the detailed design data, quality systems, procedures, etc., that the holder of a type and PC is required to have for the production of duplicate aircraft.

(4) For a major change, the FAA is not required to modify an experimental amateur-built aircraft’s special airworthiness certificate and operating limitations unless the modification creates the need for special restrictions.

c. Kit Construction.

(1) An aircraft that is built from a kit may be eligible for amateur-built certification, provided the major portion of the aircraft (that is, more than 50 percent), has been fabricated and assembled by the applicant for education and/or recreation and the applicant has evidence to support the major portion requirement. Based on the criteria set forth in paragraphs 127a and b of this order, it is obvious that an aircraft assembled from a kit composed of completely finished prefabricated components, parts, and precut/predrilled materials is not eligible for the issuance of an experimental airworthiness certificate as an amateur-built aircraft.

(2) The major portion of a kit should be composed of raw stock, such as lengths of wood, tubing, extrusions, etc., which may have been cut to an approximate length. A certain quantity of prefabricated parts, such as heat-treated ribs, bulkheads, or complex parts made from sheet metal, fiberglass, or polystyrene would also be acceptable. The kit must still meet the major portion requirement, and the applicant must show to the satisfaction of the FAA inspector that completion of the aircraft is not merely an assembly operation.

(3) Some kits may include assembly jigs, templates, raw stock, or other means to simplify the fabrication and assembly process. If an applicant proposes to use a kit that has such items provided, the FAA inspector should evaluate the kit to determine whether the builder will still fabricate and assemble the major portion of the aircraft and advise the applicant accordingly.

d. Kit Evaluation. The FAA does not certify aircraft kits or approve kit manufacturers. However, the FAA does perform evaluations of kits for the purpose of determining if an aircraft built from the kit will meet the major portion requirement of § 21.191(g). This evaluation must not be construed as meaning the kit is FAA “certified,” “certificated,” or “approved,” and it is not appropriate to represent it as such. See paragraphs 129, 130, and 131 of this order for kit evaluation criteria.

e. Advising Applicants.

(1) FAA inspection of an amateur-built aircraft will be limited to a general airworthiness inspection when the aircraft is submitted for airworthiness certification. The FAA will not perform any progressive precover inspections during the construction of the aircraft. These in-process inspections should be conducted by knowledgeable persons, for example, Experimental Aircraft Association (EAA) technical counselors and certificated mechanics, etc. All advice given to the amateur builder by the FAA should be made a matter of record for future reference. **IN NO INSTANCE WILL THE FAA ACTUALLY PERFORM ANY OF THE FABRICATION OR CONSTRUCTION WORK.**

(2) Many individuals who desire to build their own aircraft have little or no experience with respect to aeronautical practices, workmanship, or design. An excellent source for advice in such matters is the EAA, located in Oshkosh, Wisconsin. Information on EAA programs and benefits may be obtained via the EAA Web site at <http://www.eaa.org>.

(3) When the prospective builder contacts the appropriate FAA office to advise the FAA of the construction project, the inspector should provide the prospective builder with the applicable forms and any guidance necessary to ensure a thorough understanding of applicable regulations.

(4) The prospective builder, when applying for an airworthiness certificate, should submit to the FAA a three-view sketch, drawing, or photograph of the proposed aircraft project.

(5) The applicant should be advised that to show compliance with § 91.319(b), the applicant must develop a flight test program that addresses the requirements, goals, and objectives of each test flight. The flight test program should be developed in accordance with AC 90-89, Amateur-Built Aircraft and Ultralight Flight Testing Handbook, as revised, or its equivalent in scope and detail. Flight test programs accomplish two purposes. First, they ensure that the aircraft has been adequately tested and determined to be safe to fly within the aircraft's flight envelope. Second, the flight test data is used to develop an accurate and complete aircraft flight manual and to establish emergency procedures.

NOTE: The EAA flight advisor program has been established to assist applicants in developing flight test programs.

(6) The FAA district office, when requested, should furnish the builder with the following forms:

(a) Aircraft Registration Application, Form 8050-1;

(b) Application for Airworthiness Certificate, Form 8130-6;

(c) Eligibility Statement, Amateur-Built Aircraft, FAA Form 8130-12; and

(d) Affidavit of Ownership for Amateur-Built Aircraft, Aeronautical Center Form 8050-88.

(7) At the time of airworthiness certification—

(a) The aircraft should be complete in every respect, and

(b) The applicant must submit all required documentation. If the applicant cannot, or will not, provide a statement of eligibility, the applicant should be advised that the aircraft cannot be certificated as amateur-built until other satisfactory evidence is provided to substantiate that the major portion of the aircraft was built for educational or recreational purposes.

f. Weight and Balance.

(1) Before certification, the amateur builder should accurately weigh the aircraft in accordance with established weight and balance procedures to determine the aircraft's empty, gross, and most forward and aft CG location, including the weight and balance for the initial flight tests in order to help reduce stall, spin, and other control-related accidents. If the aircraft is self-designed, these limits would be determined by the builder's calculations; if the aircraft is constructed from a kit or built from purchased plans, the predetermined data would be used. The completed weight and balance report, including load limits for flightcrew, oil, fuel, and baggage, should be available in the aircraft along with the other applicable placards, listings, and markings required by § 91.9.

(2) Prior to certificating the aircraft, the FAA should verify that the weight and balance data is accurate for that aircraft, that the aircraft has been weighed correctly, and that the CG and its most forward and aft CG limits are established.

g. Transfer of Airworthiness Certificates.

(1) An airworthiness certificate is transferred with the aircraft (§ 21.179), for example, if there is a change of ownership, transfer of registration, etc. There is no FAA inspection required after transfer of an aircraft with its airworthiness certificate unless it is determined that revised operating limitations are necessary. In this case, a new Form 8130-7 must be issued to reflect the new date of the revised operating limitations. Therefore, Form 8130-6 is required to be submitted by the applicant.

(2) In some cases, amateur-built aircraft are sold with an expired airworthiness certificate or foreign airworthiness certificate. In such cases, an applicant may request and receive a special airworthiness certificate for the purpose of operating amateur-built aircraft, only if the aircraft previously was certificated in this category. In this case, a new Form 8130-7 would be issued along with new operating limitations, but without the eligibility to obtain a repairman certificate for that aircraft. The new certificate should only be issued after the FAA has verified airworthiness by following the appropriate procedures in paragraph 88 of this order.

h. Operation of Canadian-Registered Amateur-Built Aircraft in the United States.

Canadian-registered amateur-built aircraft are issued a special certificate of airworthiness with operating limitations set by Transport Canada Civil Aviation. In the United States, operation of Canadian-registered amateur-built aircraft certified under the provisions of Canadian air regulations is permitted by the issuance of an SFA under § 91.715. This authorization must be obtained before operation in the United States is permitted. The authorization may be obtained electronically via the Flight Standards Web site at <http://www.faa.gov/avr/afs/afs800/formtext.htm>. Additional guidance on the issuance of SFAs for Canadian-registered amateur-built aircraft may be found in paragraph 231 of this order.

i. Prototype Aircraft Produced by an Amateur-Built Aircraft Kit Manufacturer. When persons produce prototype aircraft to be used to prove their design for amateur-built purposes, even though the design is intended to be sold as plans and/or kits, such aircraft are considered to be produced as a furtherance of a business.

(1) These prototype aircraft are not produced by persons “solely for their own education or recreation,” and therefore cannot be certificated as amateur-built aircraft under § 21.191(g). An application to be certificated as amateur-built cannot be accepted for such aircraft, but the aircraft could qualify for the purpose of R&D under § 21.191(a). FAA inspectors may issue experimental certificates for the purpose of R&D as long as the applicant has a bona fide program of R&D.

(2) Following termination of an R&D program, such prototype aircraft may be eligible for an experimental certificate for the purpose(s) of exhibition and/or air racing with appropriate operating limitations issued for such purpose(s).

(3) Kit manufacturers also may be eligible to receive an experimental certificate (§ 21.191(f)) for the purpose of conducting market surveys, sales demonstrations, and customer crew training as provided in § 21.195(a). The airworthiness certificate may be issued ONLY after the applicant has satisfied the requirements of § 21.195(d). The following operating limitations will be added when issuing airworthiness certificates under § 21.191(f):

(a) Condition inspections must be performed in accordance with appendix D to part 43 at least every 90 days or 100 flight hours, whichever comes first. The inspections must be performed by an FAA-certificated mechanic with appropriate ratings as defined in § 43.3.

(b) Familiarization flights must be conducted only over sparsely populated areas. If aerobatics are involved, the applicant must inform the local FAA office and additional limitations may be imposed as necessary.

NOTE 1: “Customer crew training” means pilot familiarization with that aircraft rather than training the customer to become a pilot. The manufacturer will only be familiarizing an already qualified pilot with the novel characteristics of the aircraft, not training the customer to obtain a pilot’s certificate.

NOTE 2: This should not be construed to enlarge the scope of § 21.191(f) except as specifically provided. Amateur builders are not “manufacturers” for the purposes of §§ 21.191(f) and 21.195(a), and cannot obtain Form 8130-7 under § 21.191(f). In addition, a person who distributes kits or plans manufactured by another company would not qualify for Form 8130-7 under §§ 21.191(f) and 21.195(a).

128. CERTIFICATION PROCEDURES. The procedures in this chapter provide guidance material associated with airworthiness certification and the issuance of Form 8130-7.

- * **a. General.** The FAA airworthiness certification process consists of a general airworthiness inspection of the aircraft. It is accomplished after the aircraft is completed and prior to the issuance of an airworthiness certificate. During this inspection, the FAA may not request extensive disassembly of the aircraft if the builder can provide documented evidence of in-process inspections. These in-process inspections should be conducted by knowledgeable persons, for example, EAA technical counselors and certificated mechanics. The records should indicate what was inspected, by whom, and the date of the inspection. In addition, builders should document construction phases using photographs taken at appropriate times prior to covering or finishing. The photographs should clearly show the methods of construction and quality of workmanship. Such photographic records should be included with the builder's log or other construction records. The only time extensive disassembly should be requested is when there is a question of safety that would endanger the general public. When an aircraft fabricated from a kit is identified as meeting the major portion rule by the FAA, the FAA will review the applicant's documentation supplied with the kit to verify it agrees with the identification and description given in the FAA listing of eligible amateur-built kits. Deviations from the FAA-identified kit configuration will require the inspector to make an independent determination that the applicant fabricated and assembled the major portion of the aircraft. *

b. Record Inspection and Document Review. The FAA representative must—

- (1) Obtain from the applicant a properly executed Form 8130-6 and any other documents required for the certification.
- (2) Obtain from the applicant a program letter identifying the aircraft, the purpose of the certificate, the area over which the operations are to be conducted, and the duration of the program.
- (3) Review the documentation provided by the applicant to determine that the registration requirements of part 47 have been met, and ensure the aircraft is marked in accordance with part 45.
- (4) Check with AFS-750 to determine if a denial letter exists for the particular aircraft. This may assist the inspector in determining aircraft eligibility.
- (5) Review the aircraft records to determine whether any required maintenance, inspections, etc., have been accomplished. Records must be complete.
- (6) Review the applicant's weight and balance data for accuracy and currency for the aircraft submitted.
- (7) Ensure there is a signed and dated statement from the owner in the aircraft records that the aircraft has had an inspection performed in accordance with appendix D to part 43, or other approved programs, and was found to be in a condition for safe operation. This statement will support the owner's inspection and airworthiness statement on block III of the Application for Airworthiness Certificate. The inspection described above will help reduce errors made during construction of the aircraft. (Appendix 1 of AC 90-89, as revised, may be used.)

NOTE: There is NO requirement for airframe and powerplant mechanics to sign off on amateur-built airworthiness inspections. The aircraft builder's signature on Form 8130-6, block III, attests to the airworthiness of the amateur-built aircraft.

c. Aircraft Inspection. The FAA must arrange with the applicant to make the aircraft available for inspection to determine the following:

- (1) The ID plate meets the requirements of § 45.11, as applicable.
- (2) The information on the ID plate is correct, matches the information on Form 8130-6, and is in accordance with § 45.13, as applicable.
- (3) The aircraft nationality and registration marks are in accordance with part 45, subpart C.
- (4) The flight control system, engine(s), propeller(s), pitot static system, and associated instruments operate properly.
- (5) The cockpit instruments are appropriately marked, and needed placards are installed and placed for easy reference.
- (6) System controls (for example, fuel selector(s) and electrical switches/breakers) are appropriately placed, clearly marked, provide easy access and operation, and function as intended by the builder/owner.
- (7) An ELT is installed, if required (§ 91.207).
- (8) All explosive devices used in ballistic parachutes are clearly marked and identified.

d. Certificate Issuance. Upon satisfactory completion of the airworthiness inspection and documentation review, the FAA will issue the special airworthiness certificate and the operating limitations for that aircraft. The operating limitations will be attached to Form 8130-7. The FAA must review the operating limitations with the applicant to ensure a clear understanding of the limitations.

* The FAA will issue phase I and phase II operating limitations for an unlimited duration during the initial airworthiness certification. The FAA may elect to issue phase I and phase II limitations separately only when a documented safety issue exists. The operating limitations should be prescribed in two phases in the same document as follows: *

(1) For the phase I limitations, the FAA must prescribe all operating limitations appropriate for the applicant to demonstrate compliance with § 91.319(b) in the assigned flight test area. This includes a limitation requiring the owner/operator to endorse the aircraft logbook with a statement certifying that the prescribed flight hours have been completed and the aircraft has been shown to comply with § 91.319(b). The owner/operator may then operate in accordance with phase II.

(2) For the phase II limitations, the FAA must prescribe operating limitations for the operation of an amateur-built aircraft for an unlimited duration, as appropriate.

(3) Under § 91.319(e), the FAA may prescribe any additional limitations in phase I or II deemed necessary in the interest of safety.

(4) If the aircraft meets the requirements for the certification requested, the FAA must—

(a) Make an aircraft logbook entry.

(b) Issue Form 8130-7.

(c) Complete sections V and VIII of Form 8130-6, in accordance with the instructions contained in chapter 8 of this order.

(d) Examine, review, and route the certification file in accordance with the instructions contained in chapter 8 of this order.

(5) If the aircraft does not meet the requirements for the certification requested and the airworthiness certificate is denied, the FAA must—

(a) Write a letter to the applicant stating the reason(s) for denying the airworthiness certificate.

(b) Attach a copy of the denial letter to Form 8130-6 and forward to AFS-750 to be made part of the aircraft record.

129. EVALUATION OF AMATEUR-BUILT AIRCRAFT/KITS.

a. The purpose of Form 8000-38 is to record the amount of fabrication and assembly accomplished by the kit manufacturer, and the fabrication and assembly necessary for the amateur builder to complete the aircraft.

b. Form 8000-38 may be used when—

(1) Determining whether an aircraft built from a kit would meet the major portion fabrication and assembly requirement of § 21.191(g).

(2) Settling any question with respect to the major portion requirement that may arise in the certification of an amateur-built aircraft in accordance with § 21.191(g).

NOTE: The use of this checklist is not necessary for an aircraft built from a kit previously found eligible for amateur-built certification or when the builder's records, data, and notarized statement provide ample proof that the builder fabricated and assembled the major portion of the aircraft.

(3) The aircraft was built from prefabricated major components that are readily available from aircraft parts suppliers.

(4) The aircraft was built using salvaged or used sections from type-certificated standard category aircraft.

(5) The aircraft was built from a kit that has not been found eligible by the FAA.

(6) The aircraft was built from a kit that was changed by the kit manufacturer after the date of eligibility was established.

(7) Providing guidance to a kit manufacturer to determine if a proposed kit-built aircraft meets the major portion requirement of § 21.191(g). Using this checklist, the kit manufacturer can determine whether a proposed kit is eligible for amateur-built certification. If not, the kit manufacturer may be able to adjust the kit content to meet the major portion requirement.

c. The totals derived from the Kit Manufacturer and Amateur columns on Form 8000-38 indicate the relative portions of the aircraft fabricated and assembled by the kit manufacturer and the amateur builder. To meet the requirements of § 21.191(g), the total in the Amateur column must be greater than the total in the Kit Manufacturer column.

d. It is not necessary that a major portion of the individual parts be fabricated by the amateur builder. If some work (for example, trimming, measuring, cutting, drilling, gluing, lay-up, etc.) is required to prepare the individual part for installation/assembly into the aircraft, and if this work is performed on a representative number of parts listed under each applicable section of the aircraft, the kit may be considered eligible if the major portion of the aircraft has been fabricated and assembled by the amateur builder.

130. KIT EVALUATIONS AT MANUFACTURERS' FACILITIES.

a. The FAA does not certify aircraft kits or approve kit manufacturers. However, the FAA does perform evaluations of kits for the purpose of determining if an aircraft built from the kit will meet the major portion requirement of § 21.191(g). This evaluation should not be construed as meaning the kit or its manufacturer is FAA "certified," "certificated," or "approved," and it is not appropriate to represent it as such.

b. When a kit's eligibility for amateur-built airworthiness certification is questionable, the manufacturer may request evaluation by submitting a letter to the MIO responsible for the geographical area in which the kit manufacturer is located.

c. The geographically responsible MIO will forward the request for evaluation to the appropriate MIDO. The MIDO will conduct the evaluation at the kit manufacturer's facility using Form 8000-38. The kit should be evaluated in the exact configuration as supplied to amateur builders. For Form 8000-38—

(1) Upon completion of the evaluation, if the total number of check marks in the Amateur column is less than the total in the Kit Manufacturer column, the kit manufacturer will be advised that the kit does not meet the major portion requirement of § 21.191(g); or

(2) If the total number of check marks in the Amateur column is greater than the total in the Kit Manufacturer column, the kit manufacturer will be advised that the kit meets the major portion requirement of § 21.191(g).

d. Upon receipt of the completed Form 8000-38 from the MIDO, the MIO will formally notify the kit manufacturer of the results by certified mail. When a kit has been found eligible, the notification should include at least the information in the sample letter illustrated in figure 4-16. When a kit has been found not eligible, the notification should include at least the information in the sample letter illustrated in figure 4-17.

e. The MIDO that performs the kit evaluation will establish a permanent file that should contain the following documents:

(1) A copy of the eligibility or non-eligibility letter that was sent to the kit manufacturer.

(2) A copy of Form 8000-38 completed for the kit.

(3) A copy of the manufacturer's document (parts list, assembly manual, etc.), exactly as sold with the kit. Manufacturers should identify each page of the document by date and/or revision level. This information will help to establish configuration of the kit as evaluated.

f. For kits found eligible, the MIO will send an evaluation report to the Production and Airworthiness Division, AIR-200, 800 Independence Avenue SW., Washington, DC 20591. The evaluation report must contain copies of the documents listed in paragraphs 130e(1) and (2) of this order.

g. Upon receipt of the evaluation report, AIR-200 will e-mail the results to the appropriate FAA field offices and add the kit to the listing of eligible amateur-built aircraft kits. The updated listing is available on the aircraft certification page of the FAA Web site at <http://www.faa.gov>, or a hardcopy may be obtained from AIR-200 by calling 202-267-8361.

NOTE: The placing of a kit on this list is not a prerequisite for amateur-built airworthiness certification. The purpose of the listing is to assist the FAA by eliminating the need for duplication of evaluations for the major portion determination.

131. CHANGES TO ELIGIBLE KITS. Once a kit has been found eligible for amateur-built status, the manufacturer should coordinate with the FAA any change made to the kit that affects the fabrication and assembly operations.

a. The kit manufacturer should contact the geographically responsible MIO and describe the changes using parts lists, photographs, drawings, etc.

b. The FAA will determine the extent of reevaluation needed. Major changes that decrease the amount of fabrication and assembly required by the builder(s) may affect kit eligibility. Changes that consist of substituting standard hardware items, such as bolts, nuts, rivets, fasteners, etc., normally will not affect eligibility.

c. Derivative models developed from kits previously found eligible may have their eligibility determined based on inspection and evaluation of the original kit, and evaluation of detailed documentation of the changes submitted by the kit manufacturer. Inspection of the actual derivative kit is an option of the original evaluating FAA inspection office.

d. Evaluation reports of major kit changes and reports for derivative models will be processed the same way as original evaluations. Kits found not eligible after reevaluation will be removed from the listing of eligible amateur-built aircraft kits.

132. INSTRUCTIONS FOR COMPLETING FORM 8000-38.

- a. Enter the kit manufacturer's company name and address.
- b. Enter the kit model by name and/or number.
- c. List the latest date or revision date of the kit parts list, assembly manual, etc. (Be sure to include the document name.)
- d. Enter the type of aircraft (for example, land, sea, fixed-wing, rotorcraft).
- e. Review each operation for its applicability to the kit under evaluation.
- f. Check the appropriate boxes under Accomplished By for kit manufacturer and/or amateur builder.
- g. Enter any operations not on the list in blank spaces.
- h. If the operation is not applicable to the kit construction, enter "N/A" in the respective block.
- i. Operations that are accomplished by other manufacturers or suppliers are to be checked in the Kit Manufacturer block.
- j. The use of used or salvaged assemblies from standard category aircraft will be checked in the Kit Manufacturer block.
- k. Special tools and fixtures (for example, jigs, templates, etc.) fabricated by the amateur builder will be given credit. No credit will be given for fabrication of hand tools.
- l. When the evaluation is complete, enter the total number of check marks in the respective blocks on page 5 of the checklist.
- m. Sign and date the checklist.

133. FLIGHT TEST AREAS.

a. General. Section 91.319(b) requires that an unproven aircraft be assigned to a flight test area. The assigned test area is prescribed in accordance with § 91.305. The FAA, when requested, should assist applicants in selecting areas that comply with § 91.305. The FAA is required to evaluate each application to determine that the flight test area does not exceed that which is reasonably required to accomplish the program. Actions pertaining to flight test areas must be coordinated with the nearest office of the Air Traffic Service.

b. Assigned Flight Test Area. Under §§ 91.319(b) and 91.305, all initial flight operations of experimental aircraft must be limited to the assigned flight test area until the aircraft is shown to be controllable throughout its normal range of speeds and all maneuvers to be executed, and has not displayed any hazardous operating characteristics or design features.

(1) In the case of the first flight of an aircraft from an airport surrounded by a densely populated area, but with at least one acceptable approach/departure route of flight, the FAA must ensure that a route of flight is selected which subjects the fewest persons and least property to possible hazards. In addition, upon leaving such an airport, the aircraft should be required to operate from an outlying airport until its controllability and safety are established, after which the aircraft may return to its base and use the established corridor for subsequent operations. The description of the area selected by the applicant and agreed to by the FAA must be made a part of the operating limitations; or

(2) In the case of an aircraft located at any airport surrounded by a densely populated area and lacking any acceptable approach/departure route of flight, the FAA must deny the airworthiness certificate and process the denial in accordance with paragraph 88 of this order. The applicant must be advised to relocate the aircraft by other means to a suitable airport.

NOTE: An acceptable approach/departure route of flight may be considered to exist when the route of flight provides reasonable opportunity(s) to execute an off-airport emergency landing that will not jeopardize other persons or property.

c. Assigned Flight Test Area. The procedures outlined under section 6, paragraph 125 of this order are applicable to amateur-built aircraft. Although the period of assignment is not established by regulation, the following times are suggested as guidelines when issuing original airworthiness certificates for amateur-built aircraft:

(1) Amateur-built aircraft issued original airworthiness certificates should be limited to operation within an assigned flight test area for a minimum of 25 hours when a type-certificated engine/propeller combination is installed. A minimum of 40 hours is required when a non-type-certificated engine, propeller, or engine/propeller combination is installed.

(2) Amateur-built gliders, balloons, dirigibles, and ultralight vehicles that meet the requirements of § 21.191(g), and for which original airworthiness certification is sought, should be limited to operation within an assigned flight test area for at least 10 hours of operation, including at least five takeoffs and landings.

(3) Following any major change, an amateur-built aircraft must be assigned to a flight test area for a minimum of 5 hours.

d. Operation Outside Flight Test Area. The procedures outlined under section 6, paragraph 126 of this order are applicable for amateur-built aircraft. During operation outside the flight test area, the following placard must be displayed in the aircraft in full view of all occupants: “NOTE: PASSENGER WARNING—THIS AIRCRAFT IS AMATEUR-BUILT AND DOES NOT COMPLY WITH FEDERAL SAFETY REGULATIONS FOR STANDARD AIRCRAFT.”

* **NOTE: This placard is not necessary for single-place aircraft.** *

134. ISSUANCE OF EXPERIMENTAL AMATEUR-BUILT OPERATING LIMITATIONS.

a. Operating limitations must be designed to fit the specific situation encountered. The ASI may impose any additional limitations deemed necessary in the interest of safety. The ASI and/or designee must review each imposed operating limitation with the applicant to ensure that the operating limitations are understood by the applicant.

* **b.** The following operating limitations shall be prescribed to experimental amateur-built aircraft: *

(1) No person may operate this aircraft for other than the purpose of meeting the requirements of § 91.319(b) during phase I flight testing, and for recreation and education after meeting these requirements as stated in the program letter (required by § 21.193) for this aircraft. In addition, this aircraft must be operated in accordance with applicable air traffic and general operating rules of part 91 and all additional limitations herein prescribed under the provisions of § 91.319(e). These operating limitations are a part of Form 8130-7, and are to be carried in the aircraft at all times and be available to the pilot in command of the aircraft.

(2) During phase I flight testing to meet the requirements of § 91.319(b), all flights must be conducted within the geographical area described as follows:

(a) The area must be described by radius, coordinates, and/or landmarks.

(b) The designated area must be over open water or sparsely populated areas having light air traffic.

(c) The size of the area must be that required to safely conduct anticipated maneuvers and tests, as appropriate.

NOTE: In the case of an airport surrounded by a densely populated area, refer to section 6, paragraph 125b(1) of this order.

(3) This aircraft must be operated for at least ____ hours in the assigned geographic area.

NOTE: The FAA requires a minimum of 25 hours of flight testing for an aircraft with a type-certificated engine and propeller combination installed. A minimum of 40 hours is required when a non-type-certificated engine, propeller, or engine/propeller combination is installed. ASIs may assign longer test hours when it is necessary to determine compliance with § 91.319(b).

(4) All test flights, at a minimum, must be conducted under VFR, day only. Guidance concerning the scope and detail of test flights can be found in AC 90-89. Following satisfactory completion of the required number of flight hours in the flight test area, the pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with § 91.319(b) must be recorded in the aircraft records with the following, or a similarly worded, statement: **“I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous operating characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds V_{so} _____, V_x _____, and V_y _____, and the weight _____ and CG location _____ at which they were obtained.”**

(5) Except for takeoffs and landings, this aircraft may not be operated over densely populated areas or in congested airways.

NOTE: This limitation is applicable for phase 1 and 2 and should be issued in accordance with paragraphs 125b(1) and (2) of this order.

(6) This aircraft is prohibited from operating in congested airways or over densely populated areas unless directed by air traffic control, or unless sufficient altitude is maintained to effect a safe emergency landing in the event of a power unit failure, without hazard to persons or property on the ground.

NOTE: This limitation is applicable to the aircraft after it has satisfactorily completed all requirements for phase I flight testing, has the appropriate endorsement in the aircraft logbook, and is operating in phase II.

(7) This aircraft is to be operated under VFR, day only.

(8) After completion of phase I flight testing, unless appropriately equipped for night and/or instrument flight in accordance with § 91.205, this aircraft is to be operated under VFR, day only.

(9) Aircraft instruments and equipment installed and used under § 91.205 must be inspected and maintained in accordance with the requirements of part 91. Any maintenance or inspection of this equipment must be recorded in the aircraft maintenance records.

(10) During the flight-testing phase, no person may be carried in this aircraft during flight unless that person is essential to the purpose of the flight.

(11) No person may operate this aircraft for carrying persons or property for compensation or hire.

(12) The pilot in command of this aircraft must advise each passenger of the experimental nature of this aircraft, and explain that it does not meet the certification requirements of a standard certificated aircraft.

* (13) This aircraft must contain the placards, markings, etc., as required by § 91.9. In addition, the placards and markings must be inspected for legibility and clarity, and the associated systems inspected for easy access and operation, to ensure they function as intended by the builder/owner during each condition inspection. *

(14) This aircraft must display the word “EXPERIMENTAL” in accordance with § 45.23(b).

(15) This aircraft is prohibited from aerobatic flight, that is, an intentional maneuver involving an abrupt change in the aircraft’s attitude, an abnormal attitude, or abnormal acceleration not necessary for normal flight.

NOTE: If the builder states that the aircraft is capable of aerobatic flight, limitation 16 will be used in lieu of limitation 15.

(16) This aircraft may conduct aerobatic flight in accordance with the provisions of § 91.303. Aerobatics must not be attempted until sufficient flight experience has been gained to establish that the aircraft is satisfactorily controllable and in compliance with § 91.319(b). The aircraft may only conduct those aerobatic flight maneuvers that have been satisfactorily accomplished during flight testing and recorded in the aircraft maintenance records by use of the following, or a similarly worded, statement: **“I certify that the following aerobatic maneuvers have been test flown and that the aircraft is controllable throughout the maneuvers’ normal range of speeds, and is safe for operation. The flight-tested aerobatic maneuvers are _____, _____, _____, and _____.”**

NOTE: Aerobatic flights may be permitted in the assigned test area. The applicant should be advised that aerobatics or violent maneuvers should not be attempted until sufficient flight experience has been gained to establish that the aircraft is satisfactorily controllable. These operating limitations may be modified to include only those aerobatics/maneuvers that have been satisfactorily accomplished and recorded in the aircraft records during the flight test period. These aerobatic maneuvers should be permitted upon leaving the assigned test area. Appropriate limitations identifying the aerobatics/maneuvers and conditions under which they may be performed should be prescribed. The FAA may witness aerobatic maneuvers if deemed necessary.

(17) The pilot in command of this aircraft must hold an appropriate category/class rating. If required, the pilot in command also must hold a type rating in accordance with part 61, or a letter of authorization issued by an FAA Flight Standards Operations Inspector.

NOTE: This limitation applies to any turbojet/turbofan-powered aircraft, any aircraft with a maximum takeoff weight exceeding 12,500 pounds, and any other aircraft when deemed necessary. The Flight Standards inspectors should refer to FAA Order 8700.1, General Aviation Inspector's Handbook, for further guidance.

(18) The pilot in command of this aircraft must hold a pilot certificate or an authorized instructor's logbook endorsement. The pilot in command also must meet the requirements of § 61.31(e), (f), (g), (h), (i), and (j), as appropriate.

NOTE: This operating limitation applies to most amateur-built aircraft as a standard operating limitation (reference § 61.31(k)).

(19) After incorporating a major change as described in § 21.93, the aircraft owner is required to reestablish compliance with § 91.319(b) **and notify the geographically responsible FSDO of the location of the proposed test area. The aircraft owner must obtain concurrence from the FSDO as to the suitability of the proposed test area.** If the major change includes installing a different * type of engine (reciprocating to turbine) or a change of a fixed-pitch from or to a controllable propeller, the aircraft owner must fill out a revised Form 8130-6 to update the aircraft's file in the FAA Aircraft Registry. All operations must be conducted under day VFR conditions in a sparsely populated area. The aircraft must remain in flight test for a minimum of 5 hours. The FSDO may require additional time (more than 5 hours) depending on the extent of the modification. Persons nonessential to the flight must not be carried. The aircraft owner must make a detailed logbook entry describing the change before the test flight. Following satisfactory completion of the required number of flight hours in the flight test area, the pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with § 91.319(b) must be recorded in the aircraft records with the following, or a similarly worded, statement: **"I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds V_{so} _____, V_x _____, and V_y _____, and the weight _____, and CG location _____ at which they were obtained."** *

(20) This aircraft must not be used for glider towing, banner towing, or intentional parachute jumping.

(21) This aircraft does not meet the requirements of the applicable, comprehensive, and detailed airworthiness code as provided by Annex 8 to the Convention on International Civil Aviation. The owner/operator of this aircraft must obtain written permission from another CAA prior to operating this aircraft in or over that country. That written permission must be carried aboard the aircraft together with the U.S. airworthiness certificate and, upon request, be made available to an ASI or the CAA in the country of operation.

(22) No person must operate this aircraft unless within the preceding 12 calendar months it has had a condition inspection performed in accordance with the scope and detail of appendix D to part 43, or other FAA-approved programs, and was found to be in a condition for safe operation. As part of the condition inspection, cockpit instruments must be appropriately marked and needed placards installed in accordance with § 91.9. In addition, system-essential controls must be in good condition, securely mounted, clearly marked, and provide for ease of operation. This inspection will be recorded in the aircraft maintenance records.

(23) Condition inspections must be recorded in the aircraft maintenance records showing the following, or a similarly worded, statement: **“I certify that this aircraft has been inspected on [insert date] in accordance with the scope and detail of appendix D to part 43, and was found to be in a condition for safe operation.”** The entry will include the aircraft’s total time-in-service, and the name, signature, certificate number, and type of certificate held by the person performing the inspection.

NOTE: Limitations 24 and 25 will be issued in lieu of limitations 22 and 23 for turbine-powered amateur-built aircraft.

(24) This aircraft must not be operated unless it is inspected and maintained in accordance with an inspection program selected, established, identified, and used as set forth in § 91.409(e), (f), (g), and (h). This inspection must be recorded in the aircraft maintenance records.

(25) Inspections must be recorded in the aircraft maintenance records showing the following, or a similarly worded, statement: “I certify that this aircraft has been inspected on [insert date] in accordance with the scope and detail of the [identify program, title] FSDO-approved program dated _____, and found to be in a condition for safe operation.” The entry will include the aircraft’s total time-in-service (cycles if appropriate), and the name, signature, certificate number, and type of certificate held by the person performing the inspection.

(26) An experimental aircraft builder certificated as a repairman for this aircraft under § 65.104 or an appropriately rated FAA-certificated mechanic may perform the condition inspection required by these operating limitations.

(27) Application must be made to the geographically responsible FSDO or MIDO for any revision to these operating limitations.

(28) The pilot in command of this aircraft must notify air traffic control of the experimental nature of this aircraft when operating into or out of airports with an operational control tower. When filing instrument flight rules (IFR), the experimental nature of this aircraft must be listed in the remarks section of the flight plan.

135. RESERVED.