

Chapter 4. Issuing Special Airworthiness Certificates

Section 1. General

4-1. Introduction.

a. This section provides common procedures for issuing a special airworthiness certificate. A special airworthiness certificate may be issued for:

- (1) Primary. A primary category aircraft under § [21.184](#).
- (2) Restricted. A restricted category aircraft under § [21.185](#).
- (3) Limited. A limited category aircraft under § [21.189](#).
- (4) Provisional. An aircraft that meets part 21, subpart C, Provisional Type Certificates, and subpart I, Provisional Airworthiness Certificates.
- (5) Light-Sport. A light-sport aircraft under § [21.190](#).
- (6) Experimental. An aircraft for an experimental purpose under § [21.191](#).
- (7) Special Flight Permits. An aircraft that does not currently meet applicable airworthiness requirements, but is capable of safe flight, and meets §§ [21.197](#) and [21.199](#).

b. Section 2 of this chapter provides common policies and procedures for issuing a special airworthiness certificate for experimental purposes.

c. Additional policies and procedures that are specific to certain aircraft categories, experimental purposes, and for SFPs are provided in subsequent chapters of this order.

d. The following special airworthiness certificates have similar provisions for crew training and for demonstration flights. Pay close attention to the scopes of these provisions to ensure you issue the appropriate certificate.

(1) Experimental certificate for crew training under § 21.191(c) is for training the applicant's flightcrews. This normally includes a manufacturer's employees who need to be trained in experimental aircraft but may also include a company/applicant that operates an experimental aircraft and needs to train its pilots/employees to obtain an appropriate type rating or authorization to serve as pilot in command (PIC) of the aircraft.

(2) Experimental certificate for market survey under § 21.191(f) is for purposes of conducting market surveys, sales demonstrations, and customer crew training only as provided for in § [21.195](#) for an aircraft manufacturer, an engine manufacturer, or a person who has altered the design of an aircraft type-certificated in the normal, utility, acrobatic, or transport category.

(3) An SFP under § 21.197(a)(5) is for aircraft manufacturers for conducting customer demonstration flights in new production aircraft that have satisfactorily completed production flight testing.

(4) An aircraft manufacturer, therefore, could conduct sales/customer demonstration flights as experimental for market survey or with an SFP under § 21.197(a)(5).

4-2. Common Procedures for Issuing a Special Airworthiness Certificate. Except for issuance of an SFP, follow the common procedures in paragraph 2-3 of this order for issuing an

airworthiness certificate and appendix D to this order for issuing operating limitations. This paragraph does not apply to issuance of an SFP.

4-3. Flight Operations Outside the United States. A special airworthiness certificate does not authorize flight operations over a foreign country without the permission of that country. However, the FAA still issues the certificate when the applicant intends to operate the aircraft over other countries as long as the applicant meets requirements for that certificate. A U.S. special airworthiness certificate is often helpful to a Civil Aviation Authority (CAA) when issuing its permission to operate the aircraft in or over its country. If the FAA knows the affected CAA will not permit operation of the aircraft in or over its country, the FAA cannot deny issuance of the certificate if the applicant has met requirements for that certificate. In any case, an ASI should make the [applicable CAA\(s\)](#) aware of the aircraft, its category or experimental purpose, and the operating limitations for the aircraft.

4-4. Aircraft Equipped With Explosive Devices or Jettisonable Stores. These types of systems are usually associated with former-military or certain restricted category aircraft.

a. Maintenance of Jettisonable Stores. Verify that applicant's inspection program includes maintenance and inspection of jettisonable external stores systems per the manufacturer's procedures.

b. Ejection Seat Systems. Verify the ejection seat system has been approved for use in the aircraft model by the aircraft manufacturer or by a military service using that aircraft model.

c. Procedures for Securing Aircraft. Verify the applicant has provisions and procedures for securing the aircraft whenever the aircraft is parked to prevent inadvertent operations of systems that use an explosive device.

d. Airport Notification. Verify that applicant has notified the manager of the airport where the aircraft is based concerning the presence of jettisonable stores, any explosive devices, and planned operations of the aircraft from that airport.

e. Marks for Explosive Devices. Verify the applicant clearly marked all explosive devices on the exterior of the aircraft. Marks must clearly indicate that the aircraft is equipped with explosive devices.

f. Operations with Jettisonable Stores. Except for certain restricted category aircraft, only aircraft with an experimental certificate for R&D may be operated with a jettisonable store for a test that requires jettisoning that store.

Section 2. Experimental Certificates

4-5. Introduction. This section provides common policies and procedures for issuing special airworthiness certificates for experimental purposes.

4-6. Common Procedures for Issuing an Experimental Certificate (§ [21.191](#)). Follow the procedures for issuing an airworthiness certificate in section 1 of this chapter and the following:

a. Review Application. Review the program letter.

(1) Verify it meets § [21.193](#):

(a) Purpose. Verify the program letter clearly describes the purpose for which the aircraft will be used and the purpose of the experiment and that purpose is one listed in § 21.191. The use of the same aircraft for overlapping programs is acceptable, and the program letter can outline one or more programs. After showing compliance with § 91.319(b), the aircraft can be used to support other aircraft in the program or other experimental programs the applicant has underway, for example, to support flightcrew movements, to support R&D, to be used as a chase plane, or to carry spare engines. If applicable, verify such support activities are described in the program letter.

(b) Time. Verify the program letter contains the estimated number of flights or flight hours, and the period of calendar time required for the experiment.

(c) Area. Verify the program letter defines the specific area over which the aircraft will be operated, including routes to and from specified airports. A written description or annotated map is acceptable.

(d) Drawings or Photographs. Unless converted from a previously type-certificated aircraft without significant change in the external configuration, verify the program letter includes three-view drawings or three-view dimensioned photographs of the aircraft.

(2) Eligibility. Verify the program letter supports the requested experimental purpose and that purpose is one listed in § 21.191. For example, except as provided for under §§ 21.191(f) and 21.195, brokering or marketing of experimental aircraft is not a valid experimental purpose; this includes an individual who manufactures, imports, or assembles an aircraft, and then applies for an experimental airworthiness certificate to help sell the aircraft.

(3) Information for Operating Limitations. Verify the level of detail in the program letter is sufficient to enable the FAA to prescribe operating limitations.

(4) Multiple Purposes. If the applicant is seeking an experimental certificate for multiple purposes, verify the program letter clearly documents all of the items listed in paragraph 4-6.a(1) of this order separately for each purpose. In addition, verify the program letter describes any required configuration changes for changing purposes, to include adding or removing equipment and enabling or disabling systems; required configuration changes are typically specified via the modification or addition of operating limitations. Configuration changes may also require adjustments to the aircraft inspection program. Refer to paragraph 4-8 of this order for additional policies and procedures concerning multiple experimental purposes.

(5) Additional Guidance. Appendix C to this order contains additional information to help you evaluate whether a program letter is clear and specific enough to enable you to understand how the applicant will use the aircraft and to issue appropriate operating limitations.

b. Inspect Aircraft.

(1) Special Aircraft Marks. Inspect the aircraft to verify the aircraft is marked, "Experimental."

(2) Information to Safeguard the Public. Per § 21.193(c), after inspecting the aircraft, obtain any pertinent information from the applicant as necessary to safeguard the general public.

c. Issue Airworthiness Certificate.

(1) Flight Tests. For flight tests, refer to paragraph 4-7 of this order for additional policies and procedures concerning flight test areas.

(2) Reserved.

4-7. Flight Test Areas.

a. Assigned Flight Test Area.

(1) Section 91.319(b) requires that an unproven experimental aircraft be assigned to a flight test area until it is shown that the aircraft is controllable throughout its normal range of speeds, is controllable throughout all maneuvers to be executed, and has no hazardous operating characteristics or design features. Per § 91.305, verify the assigned test area includes areas over open water or sparsely populated areas and with light air traffic. Evaluate each application to determine that the flight test area and airports are sufficient to accomplish the program. In some cases, assigning multiple flight test areas and airports may be required to accommodate various aircraft configurations, types of operations, airport facilities, or safety hazards.

(2) It is recommended that you coordinate the applicant's proposed flight test area with an operations ASI. In addition, consider coordinating with the applicable Air Traffic Control (ATC) facilities. The General Aviation Operations Branch (AFS-830) is available to assist in resolving any issues in assigning flight test areas.

b. Airport Surrounded by Densely Populated Area.

(1) Coordination of Approach/Departure Routes. Before issuing operating limitations for the aircraft, coordinate approach and departure routes with the FSDO operations unit and the ATC facility that has the geographic responsibility for the applicable airport(s) and flight test area(s).

(2) Acceptable Approach/Departure Route. 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, ensure a route is selected which subjects the fewest number of persons and the least property to possible hazards. In addition, upon leaving such an airport, the aircraft must 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 route for subsequent flight operations. The description of the area selected by the applicant and agreed to by the FAA must be included in the operating limitations.

Note: An acceptable approach/departure route provides a reasonable opportunity to execute an off-airport emergency landing that will not jeopardize other persons or property.

(3) No Acceptable Approach/Departure Route. In the case of an aircraft located at an airport surrounded by a densely populated area with no acceptable approach/departure route, you may issue the airworthiness certificate that includes an operating limitation that prohibits operations at that airport. Advise the applicant to relocate the aircraft to an airport suitable for flight testing.

c. Aerobatics.

(1) Aerobic maneuvers may be permitted while the aircraft is in the assigned flight test area if the aircraft has the capability of such flight. However, these maneuvers should not be

attempted until sufficient flight experience has been gained to establish that the aircraft is controllable.

(2) Aerobatic maneuvers that have been demonstrated in the assigned flight test area should be documented in the aircraft records. Only those aerobatic maneuvers that have been successfully accomplished should be permitted after leaving the assigned flight test area.

d. Duration of Assignment to the Flight Test Area.

(1) Duration. Except for amateur-built aircraft and experimental light-sport aircraft (ELSA), there are no specific flight time requirements or guidelines for operation within an assigned flight test area. Judge each case based on the type, complexity, and condition of the aircraft and the complexity of the test. For example, flight testing in conjunction with a minor STC alteration may require only one hour in an assigned flight test area while the initial operation of a prototype jet aircraft or a former-military aircraft may require much more time. In some cases, it may be appropriate to specify the duration as completion of the flight test program, not a fixed flight time.

(2) Finding Compliance. You may amend the operating limitations to permit flight outside of the assigned flight test area after the applicant shows and you find compliance with § 91.319(b). Your finding may be based on a statement by the pilot in the aircraft maintenance records that the aircraft is controllable throughout its normal range of speeds and throughout all of the maneuvers to be executed and has no hazardous operating characteristics or design features. You may also witness flights or inspect the aircraft if deemed necessary. You may also find compliance based on the FAA-approved procedures of a PC holder or modifier as discussed in paragraph 4-94-9 of this order. Note that an application is required to amend the airworthiness certificate/operating limitations.

e. Phased Operating Limitations. Phased operating limitations are allowed for exhibition, air racing, operating amateur-built aircraft, or operating light-sport aircraft under § 21.191.

(1) Phase I means the initial flight testing period for a newly assembled aircraft, not a newly manufactured or newly built aircraft. Newly manufactured or newly built aircraft must complete initial flight testing comparable to experimental amateur-built aircraft.

(2) Phase II means a period in which an aircraft has completed phase I testing and has not been altered from the tested configuration or flown outside the flight tested envelope.

f. Operating Outside Flight Test Areas. After complying with § 91.319(b), aircraft may be operated outside of an assigned flight test area. Except as provided for in paragraphs 4-9 and D-3 of appendix D to this order, operation of the aircraft outside an assigned flight test area will require issuance of an amended experimental airworthiness certificate with amended operating limitations.

4-8. Multipurpose Experimental Airworthiness Certificates. An experimental airworthiness certificate may be issued for more than one of the purposes under § 21.191. When more than one purpose is requested, verify the operator has adequate procedures for ensuring airworthiness when changing purpose. The issuance of multiple purpose certificates for R&D and showing compliance should be limited to PC holders; this may be extended to modifiers (§ 21.195(c)) when justified. PC holders or modifiers may submit a procedure that meets the requirements of paragraph 4-94-9 of this order to their geographic responsible FAA office for approval.

Note: Issuing multiple certificates for a restricted category aircraft under § 21.187 is different than issuing an experimental certificate with multiple purposes or issuing multiple experimental certificates for multiple purposes. Issuance of multiple certificates for restricted category aircraft is covered by chapter 7 of this order.

a. Options. Use your discretion in determining the best option for the desired use. Options include issuing multiple certificates, issuing a multipurpose certificate, or not allowing the aircraft to be used for more than one purpose.

b. Configuration Changes. Consider how the aircraft configuration may change and how the operation of the aircraft may change from one purpose to another. This information should be included in the program letter because it may impact the operating limitations issued to the applicant, and/or additional inspections may be required when changing purposes.

Example 1: The holder of an experimental exhibition certificate seeks an experimental R&D certificate for flying as a chase aircraft in support of an R&D project. No alterations to the aircraft are necessary. An R&D certificate could be issued for the duration of the R&D project, and the applicant could be allowed to hold both certificates. When the R&D project is completed, no further action is required because the applicant still holds the exhibition certificate.

Example 2: The holder of an experimental exhibition certificate seeks an experimental R&D certificate to test new sensor technology. The operator will need to appreciably modify the aircraft. The aircraft should only hold the R&D certificate.

Example 3: An applicant for an experimental certificate for operating an amateur-built aircraft mentions they intend to race the aircraft. A single certificate with both purposes listed may be appropriate in this situation.

Note: Configuration changes and operational differences should also be considered if the applicant intends to conduct public or military aircraft operations while holding the experimental certificate.

4-9. PC Holder's or Modifier's Procedure for Operating Experimental Aircraft. A PC holder or aircraft modifier who applies regularly for special airworthiness certificates to conduct flight tests following the same procedures may submit its procedures to its geographic responsible FAA office for approval. Having an approved procedure benefits the applicant and the FAA with increased standardization, simpler program letters, reduced duplication of coordination among FAA offices, and more timely issuance of airworthiness certificates. After approval, the procedure may be listed in the operating limitations as indicated in appendix D to this order. The FAA may exclude certain aircraft from the privileges of either all or part of this procedure such as the first aircraft of a new model or a non-production R&D aircraft. The procedure should include the following elements:

a. Flight Test Area. A description of the flight test area that meets paragraph 4-7 of this order.

b. Flight Log. A daily flight log that records completion of pre-flight inspections and compliance with § 91.319(b) for the duration of the certificate.

c. Flights Outside the Test Area. A description of the method used to conduct and record necessary flights outside the test area, and for maintaining these records. This procedure will remain active for the duration of the certificate, and will eliminate the need for the PC holder to obtain approval for each flight.

d. Carriage of Persons. A description of the method used to define the persons who may be carried during these flight operations that includes:

(1) A requirement that the PIC advise each passenger of the experimental nature of the aircraft, per § 91.319(d).

(2) A method of recording persons carried on each flight for the duration of the certificate.

(3) A provision that no persons may be carried in the aircraft during flight unless that person is required for the purpose of the flight. Persons other than flightcrew members may be carried when all of the following conditions are met:

(a) The aircraft is of the same basic model that previously has shown compliance with §§ 91.319(b) and 21.195.

(b) Flight tests do not include intentional maneuvers involving abrupt changes in the aircraft's attitude, abnormal attitudes, or abnormal acceleration/deceleration not necessary for normal flight.

(c) The procedures specifically cover the types of flying to be permitted while carrying passengers other than flightcrew members.

e. Multiple Experimental Purposes. A description of the method used to determine an aircraft is in a condition appropriate for the purpose intended when changing from one experimental purpose to another, including documenting the results of this determination in a maintenance record or daily flight sheet.

f. Carrying the Approved Procedure. A requirement that a copy of the procedures approved under paragraph 4-9 of this order be carried in the aircraft while operating under the privileges of this procedure. A copy of this procedure may also be included or directly referenced in the PC holder's quality manual for the convenience of the manufacturer and the FAA.

g. Other. Any other procedures you deem necessary in the interest of safety.

Note: Approval of this procedure may require the coordination of different offices within the FAA (such as MDOs, FSDOs, the Air Traffic Organization (ATO), the Aircraft Evaluation Group (AEG)), and outside the agency. This could include airport first responders such as fire departments and security.

4-10. Inspection Programs for Certain Experimental Aircraft. This paragraph applies to experimental aircraft that are turbine-powered or weigh over 12,500 pounds. Advise the applicant to consider FAA AC 43-209, *Recommended Inspection Procedures for Former Military Aircraft*, in developing its inspection program.

Note: This paragraph is being relocated to FAA Order 8900.1. Once relocation is complete, refer to FAA Order 8900.1.

a. Definitions. The following definitions are terms that may be used in the development of inspection programs for these aircraft.

(1) Overhaul. Methods, techniques, or practices for disassembling, cleaning, inspecting, repairing as necessary, reassembling, and testing in accordance with approved standards and technical data acceptable to the Administrator. Overhaul should not be confused with life limit.

(2) Life Limit. The finite/retirement time assigned to a component that requires the removal of that component from service.

(3) Shelf Life. A recommended time determined by the manufacturer for removal of a component from service.

b. Inspection Program Submittal Requirements. The applicant should submit the following material for review:

(1) Proposed Inspection Program. The submitted program for an aircraft may be a current manufacturer's program, a current military program (preferably North Atlantic Treaty Organization (NATO)), an owner/operator-developed program, or based on a program previously approved for the same make/model. Prior FAA approval of an inspection program does not guarantee an automatic approval for a similar make/model because inspection programs are aircraft-specific and will be identified by the aircraft S/N. Inspection programs are subject to amendment whenever significant changes in operating environment and/or equipment occur.

(2) Operable Ejection Seats. The inspection program for operable ejection seats will be based on a current manufacturer's or current military program, and will include replacement intervals for shelf-life components such as pyrotechnic cartridges. Shelf-life intervals cannot be extended without the manufacturer's approval.

(3) Required Manufacturer/Military Manuals. If the manuals were not originally published in English, the applicant will submit an English translation of the original manuals. It is to the applicant's benefit to ensure the translation is performed by a technically competent individual familiar with aviation terms and practices.

(4) Substituting Materials or Replacement Parts. Changes involving the substitution of materials or replacement parts should be in accordance with FAA-accepted procedures or a recognized industry standard, or based on dimensions and technical data provided by the manufacturer or information provided by an appropriate engineering evaluation. Life-limited articles specified in the applicable technical publications pertaining to the aircraft and its articles are complied with in one of the following manners:

(a) Type-Certificated Products. Replacement of life-limited parts required by § 91.409(e) is only applicable to experimental aircraft when the required replacement times are specified in the U.S. aircraft specifications or TCDS.

(b) Non-Type-Certificated Products. Unless otherwise determined by the FAA, all articles installed in non-type-certificated products operated in the experimental category, in which the manufacturer has specified limits, must include in their program an equivalent level of safety for those articles. Although the FAA recommends adherence to part replacements, achieving an equivalent level of safety for non-type-certificated products is acceptable. The