

ERA22FA279

AIRWORTHINESS

Group Chair's Factual Report - Attachment 4
FAA Order 8130.2J Chapters 4 and 12 and Appendix D

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 MIDOs, 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

article must be inspected to ensure the equivalent level of safety still renders the product in a serviceable condition for safe operation.

(5) Extension of Component Life Limits.

(a) The applicant may submit data (review by an FAA designated engineering representative (DER) is encouraged), with a request to the FSDO, to extend the life limit on specific components of the aircraft beyond the manufacturer, military, and/or technical order recommended life limits. At a minimum, the data submitted by the applicant should contain:

- 1 The original strength, stress, and fatigue data for the aircraft and the pertinent parts, including other parts that may be affected by changes of the life limits and inspection intervals;
- 2 The methodology the designers used while developing the life limits and inspection intervals;
- 3 The operational history of the aircraft and parts (usage affects life limits and inspection intervals);
- 4 The service history of the aircraft and pertinent parts, including any repairs and modifications affecting the strength, stress, and fatigue characteristics of the parts and their effects on the parts' life limits and inspection intervals;
- 5 How the present operational usage differs from prior military usage;
- 6 Evidence that the applicant's inspection/testing techniques, for example, nondestructive inspection/nondestructive testing, are comparable to those used by the military;
- 7 Evidence that the methodology chosen by the owner (for example, damage tolerance with inspections versus safe-life with automatic removal) produces at least as safe a product as the military's approach.
- 8 A procedure to inspect the component to some appropriate physical standard, and non-destructive testing, where applicable.

(b) In cases where the data listed above is unavailable or cannot be substantiated, the components will not be eligible for any extension of life limits.

(6) Extension of Component Recommended Overhaul Times. The owner/operator may elect to continue in service any component that has reached its recommended overhaul time if an approved inspection is implemented that includes a procedure to inspect the component to an appropriate physical standard with a definitive time period for review. Testing to the standard may be accomplished in place where practicable. This inspection procedure will be submitted to the local FSDO to be included in the FAA-approved inspection program.

c. Inspection Program Content.

(1) The owner/operator-developed inspection program presented for FAA approval should reference specific details from the appropriate military/manufacturer's manuals while encompassing the scope and detail of part 43, appendix D, as appropriate.

(2) As an alternative, a military/manufacturer's inspection program may be adopted and presented for FAA approval. Specific irrelevant sections may be deleted for aircraft systems

that have been removed or deactivated. However, all inspection programs will provide for a complete inspection of the aircraft within the preceding 12 calendar months.

(3) The following items should be a part of an approved inspection program:

(a) Title page that includes the aircraft manufacturer's name and the aircraft model, serial number, and registration number to which the inspection program applies; and the owner/operator's name and address.

(b) Table of contents.

(c) Log of revisions.

(d) Method of revision.

(e) List of effective pages.

(f) Introduction that includes the following:

1 A description of the inspection program with references to sections and supporting documents. These references may include standards of performance, procedures, methods, instructions, or other technical data. If section references are not specified by title, page, and revision, the referenced documents in their entirety become a part of the inspection program.

2 A statement that this inspection will be performed to ensure the aircraft is in a condition for safe operation and the inspection is performed in accordance with the procedures of the program.

3 Identification of the individual responsible for scheduling and performing the inspections, including their name and address.

4 A listing of the specific maintenance/inspection manuals for the make and model of the aircraft being certificated.

(g) Program-unique definitions and/or acronyms.

(h) A replacement schedule of life-limited/retirement items, if applicable.

(i) Procedures to ensure inspection records are kept and include:

1 Date of inspection,

2 Name and certificate number of the person performing the inspection,

3 Type of inspection, and

4 Total time of the component being inspected expressed in cycles, calendar time, hours, or any combination of these.

(j) Instructions and procedures for the conduct of inspections for the particular make and model of aircraft, including necessary tests and checks. The instructions and procedures must set forth in detail the parts and areas of the airframe, engines, propellers, and appliances required to be inspected, including survival and emergency equipment.

(k) A schedule for performing the required inspections under the program as expressed in terms of time-in-service, calendar time, number of system operations, or any combination of these. It should also include low-utilization inspections.

(l) Additional procedures, including—

- 1 Special inspections such as short-and long-term storage/out-of-service inspections, hard landing inspections, and structural inspections;
- 2 Compliance with service letters, service bulletins, time compliance technical orders, and ADs, as well as the method to ensure compliance;
- 3 Corrosion inspections; and
- 4 Any other inspection that may be required due to unusual environmental operations or aircraft design, such as composite construction.

d. Inspection Program Approval. Approval of the inspection program is granted by a stamp of approval and the principal maintenance inspector/principal avionics inspector signature on the list of effective pages (LEP), or by some other official means of conveying approval.

e. Maintenance Requirements. The owner/operator of the aircraft will have the inspections performed as prescribed in the approved program and will, between inspections, have discrepancies repaired per the appropriate manufacturer/military manuals, instructions, and technical orders.

f. Maintenance Records. The owner/operator shall keep the records required under § 91.417 as applicable to the aircraft.

4-11. Former-Military Aircraft Operated for Experimental Purposes.

a. Advising the Applicant. Advise the applicant to review AC 21-54, *Experimental Airworthiness Certification of Certain Former-Military Aircraft*.

b. Eligibility.

- (1) If a TC has not been issued for the aircraft, it may be eligible for a special airworthiness certificate for the experimental purpose of R&D, crew training, exhibition, or air racing.
- (2) Some aircraft may have high risk factors that may be impractical to mitigate and, consequently, may not be eligible for an airworthiness certificate.

c. Identify Potential Safety Hazards. Given the variety of aircraft types, models, alterations, operational histories, and airworthiness ramifications of possible long-term storage, becoming familiar with former-military aircraft is especially important. Additional considerations for becoming familiar with the aircraft and with potential safety hazards include:

- (1) Identify the aircraft model and/or series, as well as the type of engine(s), propellers, and other systems installed, as applicable. Obtain as much historical information as possible to include S/Ns, overhaul dates, airframe cycles, and engine time and cycles.
- (2) Review accident and incident data for the aircraft model. Data can be retrieved from the NTSB [database of accidents and incidents](#), the FAA, and other international and military sources.
- (3) Review available aircraft type club information.

(4) Review the ownership history of the aircraft. This may provide information on how the aircraft was previously operated and maintained, which may have implications for the airworthiness inspection.

(5) Become familiar with the scope of any restoration, repairs, and maintenance conducted by or for the applicant. It is also helpful to become familiar with the general condition of working/storage areas, availability of spare parts, and equipment before conducting the formal records inspection.

(6) Ensure the operator has a complete set of the applicable military flight, inspection, and maintenance manuals for the aircraft and inspection and maintenance manuals for the engine.

(7) Ensure the operator has applicable military technical orders to address known issues related to airworthiness, maintenance, and servicing.

(8) Identify any high-risk factors associated with the design, manufacture, maintenance, and operation of the aircraft. Verify the applicant adequately mitigates any high-risk factors.

d. Import Documentation for Imported, Former-Military Aircraft.

(1) Records for imported, former-military aircraft that may have weapons installed should include the following documents issued by the Department of Justice, Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF):

(a) ATF Form 6, *Application and Permit for Importation of Firearms, Ammunition, and Implements of War*.

(b) ATF Form 6A, *Release and Receipt of Imported Firearms, Ammunition, and Implements of War*.

Note: For any questions regarding ATF Forms 6 or 6A, contact the ATF Firearms and Explosives Imports Branch.

(2) A product that was declared as parts, scrap, or for museum display on any documentation related to importing that product is not eligible for an airworthiness certificate. This includes documents issued by or for ATF, Customs and Border Protection, or the Department of State.

e. Demilitarization of Former-Military Aircraft.

(1) Removing or Disabling Systems. The FAA may require that some systems be removed or disabled to establish a condition for safe operation for the intended use. For example, safe operation of guns, cannons, targeting radars, electronic jammers, jettisonable stores (including external store pylons and external fuel tanks), or explosive devices may not be feasible under or consistent with the intended experimental purpose. Potential safety hazards related to these systems include accidental firing of guns, accidental release of stores, accidental operation of radars on the ground, compartment fires, and damage to the airframe. These hazards may pose risks to other aircraft and to persons and property on the ground and may not be able to be adequately mitigated via operating limitations. Although some of these systems may be required to support a valid R&D purpose, the applicant and the FAA need to understand

the corresponding safety risks and work closely together to determine the feasibility of mitigating these risks via operating limitations.

(2) **Additional Information on Weapons.** For additional information on aircraft weapons systems, refer to aircraft maintenance manuals and the related weapons delivery manual. Some aircraft manufacturers may offer guidance on aircraft demilitarization. Consider [U.S. Air Force Technical Order 00-80G-1](#), *Make Safe Procedures for Public Static Display*.

f. Ejection Seats.

(1) An inspection program for operable ejection seats will be based on a current manufacturer's or current military program, and will include replacement intervals for life-limited or shelf-life-limited components such as pyrotechnic cartridges. These limits cannot be extended without the manufacturer's approval.

(2) The PIC and flightcrew operating aircraft equipped with operational ejection seat(s), whether armed or not armed, must have satisfactorily completed an ejection seat training program per AC 91-87, *Ejection Seat Training Programs*, within the past 24 calendar months prior to operation for this make and model of aircraft. Passengers of these aircraft must have a safety brief prior to flight per AC 91-87.

(3) The PIC and flightcrew operating aircraft that were previously issued an operating limitation that required FAA acceptance or approval of an ejection seat training program, meet that operating limitation if they successfully complete training using an ejection seat training program per the AC 91-87 for the applicable aircraft make/model.

(4) For questions concerning specific aircraft and ejection seat training, contact the local FSDO or AFS-830.

g. Drag Chutes. As applicable, verify the drag chute installation records reflect installation per applicable military installation requirements.

4-12. Flight Operations in Reduced Vertical Separation Minimum (RVSM) Airspace.

Experimental aircraft that do not meet the requirements of § [91.180\(a\)](#) may be allowed to operate in RVSM airspace in certain circumstances as described in § 91.180; part 91, appendix G; and the [Aeronautical Information Manual](#). In addition, at the time of the flight, ATC must find the aircraft can be provided appropriate separation and that the flight will not interfere with, or impose a burden on, other approved RVSM operations.

a. Flights for aircraft certification and development purposes may be allowed in RVSM airspace. These flights are typically limited to gathering data to show that the aircraft can meet the minimum standards for the operation in RVSM airspace specified in part 91, appendix G.

b. Aircraft climbing or descending through RVSM flight levels without intermediate level off, to or from flight levels above RVSM airspace, may be accommodated. Obtain data from the operator showing that the aircraft can complete a non-stop climb to flight level 430.

4-13. Pioneer Era Aircraft. Replica, reproduction, restored, and similar aircraft based on aircraft from before the year 1914, require special consideration. Many of these aircraft have limited maneuverability and are only capable of flying for very short distances. An application for an airworthiness certificate for these aircraft should be coordinated with the Airworthiness Certification Section (AIR-113) or the General Aviation and Commercial Division (AFS-800) to ensure the operating limitations are appropriate for the intended operations.

Chapter 12. Experimental Purpose of Exhibition (§§ 21.191(d))

12-1. Introduction. This chapter provides policies and procedures for issuing special airworthiness certificates for the experimental purpose of exhibition per § [21.191\(d\)](#).

12-2. Procedures for Issuing Airworthiness Certificates. Follow chapter 4 of this order and the following:

a. Review Application. Verify the application, including the program letter, demonstrates eligibility for the requested experimental purpose of exhibition. This purpose includes exhibiting the aircraft's flight capabilities, performance, or unusual characteristics at air shows, fly-ins, and similar events; for motion picture, television, and similar productions; and for the maintenance of exhibition flight proficiency, including (for persons exhibiting aircraft) flying to and from such events and productions.

b. Reserved.

Appendix D. Issuing Operating Limitations for Non-Standard Aircraft

D-1. **Introduction.** This appendix provides procedures for issuing operating limitations for non-standard aircraft.

D-2. General.

a. GPO Pad Version of FAA Form 8130-7.

(1) Operating limitations generally applicable to non-standard aircraft are printed on the back side of the paper, GPO pad version of FAA Form 8130-7, *Special Airworthiness Certificate*.

(2) Additional operating limitations will be listed and numbered on a separate sheet, dated, signed, and attached to FAA Form 8130-7. At least the first page of the operating limitations should be typed on FAA-branded paper. FAA-branded paper or an electronic template may be provided to FAA designees for the sole purpose of issuing aircraft operating limitations.

b. PDF Version of FAA Form 8130-7. Operating limitations generally applicable to non-standard aircraft are included by default in the *Conditions and Limitations* section of the PDF version of this form. Edit these conditions and limitations as follows:

(1) If the certificate is not for a production flight test, delete paragraph concerning production flight tests.

(2) If the certificate is not for a SFP, delete “This airworthiness certificate authorizes the flight specified for the purpose shown.”

(3) Copy additional operating limitations into the *Conditions and Limitations* section of the form.

(4) When issuing a replacement certificate for a certificate previously issued with the GPO pad version of FAA Form 8130-7, and the original operating limitations are available, you may retain the default operating limitation concerning Annex 8 of the ICAO Convention from the PDF version of the certificate, delete the other default conditions and limitations, and add a statement such as, “The attached operating limitations dated [insert date] are part of this certificate.”

(5) After the last condition & limitation, place “-END-” approximately centered on the page as included by default in the form.

c. Additional Operating Limitations.

(1) Table D-1. Additional operating limitations must include the applicable limitations from table D-1 of this appendix. However, operating limitations involving certificate holders who have demonstrated a high degree of competence in manufacturing and/or operations (for example, an original equipment manufacturer that has an ODA, PC, or TC) should be considered for variances from the standard limitations when appropriate.

(2) Other. The operating limitations of table D-1 of this appendix are not sufficient to mitigate every safety risk you may encounter with a particular aircraft or operation. Operating limitations must be designed to fit the specific situation encountered, which may vary depending

on the aircraft type, aircraft configuration, aircraft condition, operating area, air traffic, operator capabilities, and intended use. Based on your inspections and assessment of potential safety hazards, prescribe additional operating limitations you consider necessary for safe operation.

d. USC or 14 CFR Requirements. Do not paraphrase or quote requirements from 49 USC or 14 CFR in the operating limitations.

e. Job Aid. For assistance in drafting operating limitations, a job aid with a fillable template is posted with this order on [RGL](#). You must compare operating limitations generated using the job aid with this appendix to verify the listing of operating limitations is complete and correct.

D-3. Phased Operating Limitations. Experimental certificates for exhibition, air racing, operating amateur-built aircraft, or operating light-sport aircraft (LSA) may have operating limitations issued in two phases. Phase I operating limitations are for the applicant to demonstrate compliance with § 91.319(b). This includes a limitation requiring the owner/operator to endorse the aircraft maintenance records with a statement certifying that the prescribed flight hours and/or landings have been completed, and the aircraft has been shown to comply with § 91.319(b). The owner/operator may then operate per phase II operating limitations. Usually phase I and phase II operating limitations are issued for an unlimited duration during the initial airworthiness certification. The FAA may elect to issue phase I and phase II limitations together or separately as necessary in the interest of safety.

D-4. Procedures.

a. Do not place the operator's or applicant's name on the limitations.

b. Do not incorporate the applicant's program letter by reference.

c. Do not incorporate the provisions, conditions, or limitations of an exemption applicable to this aircraft or the current owner/operator.

d. Use the following section numbers from 14 CFR to identify the applicable operating limitations in table D-1 of this appendix:

- (1) Section 21.184—Primary.
- (2) Section 21.185—Restricted.
- (3) Section 21.187—Multiple (one of which is always restricted category).
- (4) Section 21.189—Limited.
- (5) Section 21.190—LSA.
- (6) Section 21.191—Experimental.
 - (a) Paragraph (a), R&D.
 - (b) Paragraph (b), Showing compliance with regulations.
 - (c) Paragraph (c), Crew training.
 - (d) Paragraph (d), Exhibition.
 - (e) Paragraph (e), Air racing.
 - (f) Paragraph (f), Market surveys.

(g) Paragraph (g), Operating amateur-built aircraft.

(h) Paragraph (h), Operating primary kit-built aircraft.

(i) Paragraph (i), Operating LSA.

e. Start at the top of the table and work down. If the certification basis and/or the notes apply to the aircraft, issue the limitation as worded in the table. Number the limitations sequentially starting with “1,” and place the number of the limitation from the order in parentheses at the end of the limitation. Some limitations have multiple statements with different applicabilities; in these cases, issue the appropriate segment(s) of the limitation.

f. Aircraft with very high risk factors or safety of flight issues must have those factors properly mitigated. Restrict operations to a specified geographical area, and prohibit the carriage of passengers, flight over densely populated areas, and night or instrument flight rules (unless restricted to visual meteorological conditions (VMC)) operations for any of the following conditions:

(1) Aircraft for which the applicant has surrendered a special LSA airworthiness certificate (§ 21.190) and is applying for an experimental airworthiness certificate (§ 21.191) for the first time, and is not in compliance with § 91.327(b)(3) or (4);

(2) Aircraft for which the manufacturer’s or country of origin’s emergency checklist requires bailout or ejection in the event of an engine or other system failure;

(3) Any aircraft in which a single system failure will render the aircraft uncontrollable, such as an airplane with a hydraulic flight control system with only one hydraulic pump;

(4) Aircraft unable to comply with § 91.117(a) in normal cruise configuration; and

(5) Rocket-powered aircraft.

g. Aircraft to be Operated Over a Foreign Country. No person may operate an aircraft with a special airworthiness certificate over any foreign country without permission from that country.

(1) Aircraft Based in the United States. For any operating limitation that specifies a geographic area for flight operations, do not include a geographic area over a foreign country.

(2) Aircraft Based in a Foreign Country. Remove any operating limitation that specifies a geographic area for flight operations.

h. After the last limitation, sign and date the document.

D-5. Coordination.

a. R&D or Showing Compliance. Questions about a specific limitation in table D-1 of this appendix or change to that limitation for the purposes of R&D or showing compliance with regulations should be directed to the local manufacturing office or ACO as appropriate; the local manufacturing office may approve changes to limitations for the purposes of R&D or showing compliance with regulations.

b. Purposes Other Than R&D or Showing Compliance. Questions about a specific limitation in table D-1 of this appendix or changes to that limitation, for purposes other than R&D or showing compliance with regulations, should be directed to the responsible office for

that limitation. The responsible office is AFS-800 unless otherwise specified in table D-1 of this appendix.

c. Additional Limitations for Certain Purposes. You may prescribe additional limitations for the purposes of R&D, showing compliance with regulations, crew training, or market survey without coordination.

d. Certain Former-Military Aircraft. You are encouraged to coordinate with AIR-113 operating limitations for former-military aircraft that weigh more than 9,000 pounds maximum takeoff weight, with turbine power greater than 3,000 pounds of total engine thrust of all engines or 1,000 shaft horsepower of one engine or if it was originally equipped with an ejection seat system.

e. Coordination Mailbox. You may [email](#) requests for coordination or questions about operating limitations to the responsible offices of table D-1 of this appendix. Include a copy of the application and, if applicable, the program letter. If an applicant is requesting you change or omit a limitation, include their rationale for doing so and their proposal for providing an equivalent level of safety.

D-6. Review with Applicant. When issuing a certificate, review the operating limitations with the applicant to ensure a clear understanding of the limitations. Remind the applicant they must comply with the applicable regulations, emphasizing § 91.9 and the following:

- a. Restricted.** Refer to §§ 21.181, 45.23, 91.203, and 91.313.
- b. Special LSA.** Refer to §§ 21.181, 43.11, 45.23, 91.203, and 91.327.
- c. Experimental.** Refer to §§ 21.181, 45.23, 91.119, 91.180, 91.203, 91.305, 91.319, and 91.817.
- d. Limited.** Refer to §§ 21.181, 45.23, 91.203, and 91.315.
- e. Primary.** Refer to §§ 21.181, 91.203, and 91.325.
- f. Provisional.**
 - (1) Class I. Refer to §§ 21.81(e) and 91.317.
 - (2) Class II. Refer to §§ 21.83(h), 91.317, and 121.207.
 - (3) Provisional Amendments to a TC. Refer to §§ 21.85(g), 91.317, and 121.207.
- g. Operations Over a Foreign Country.** Advise the applicant that it may not operate its aircraft over any foreign country without the special permission of that country. The applicable authority of that country may prescribe any operating limitation it deems appropriate, including any limitation concerning geographic areas for flight operations.

Table D-1. Operating Limitations			
No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
All Operations			
1	184, 185, 189, 190, 191 AIR-113		This aircraft does not meet the airworthiness standards of Annex 8 to the Convention on International Civil Aviation. Operations in airspace outside of the United States will require the permission of the applicable foreign authority. That permission must be carried aboard the aircraft together with this U.S. airworthiness certificate and, upon request, be made available to an FAA inspector or the applicable foreign authority in the country of operation. Operations may be further restricted by the applicable foreign authority. This may include not allowing use of an airport, requiring specific routing, and restricting flight over specific areas. The operator must comply with any additional limitation prescribed by the applicable foreign authority when operating in its airspace. (1)
2	184, 185, 189, 190, 191 AIR-113		These operating limitations do not provide any relief from any applicable law or regulation. This aircraft must be operated per applicable regulations and the additional limitations prescribed herein. Note that a clearance from air traffic control (ATC) is not authorization for a pilot to deviate from any rule, regulation, operating limitation, or minimum altitude, or to conduct unsafe operation of the aircraft. If ATC issues a clearance that would cause a pilot to deviate from a rule, regulation, or operating limitation, or in the pilot's opinion, would place the aircraft in jeopardy, it is the pilot's responsibility to request an amended clearance. These operating limitations are a part of FAA Form 8130-7 and are to be carried in the aircraft at all times and to be available to the pilot in command of the aircraft. (2)
3	191 AFS-800		This special airworthiness certificate is not in effect during public aircraft operations (PAO). Concurrent public/civil operations are not permitted; the aircraft cannot be operated as a civil aircraft and as a public aircraft at the same time. No weapons or special military mission systems may be added to the aircraft. This airworthiness certificate is not in effect during flights related to providing military services (that is, air combat maneuvering, air-to-air gunnery, target towing, electronic countermeasures simulation, cruise missile simulation, and air refueling). These activities are inherently military, not civil activities. The FAA makes the distinction between the authorized flights for experimental purposes, and PAO. Before operating this aircraft under this special airworthiness certificate following a PAO, the aircraft must be returned to the condition and configuration at the time of inspection for the issuance of this airworthiness certificate. The operator must have written procedures for returning the aircraft to the civil configuration. This action must be documented in the maintenance records. The maintenance records and entries must clearly differentiate between a civil experimental flight per this certificate and any other flights. (3)
4	184, 185, 189, 190, 191 AFS-300		Application to amend this certificate must be made to the local Flight Standards District Office (FSDO) or Manufacturing Inspection District Office (MIDO). (4)

Table D-1. Operating Limitations			
No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
5	191(g) AFS-800		No person may operate this aircraft for other than recreation and education. (5)
6	190 AFS-800		This aircraft may only be operated per the manufacturer's aircraft operating instructions (AOI), including any requirement for necessary operating equipment specified in the aircraft's equipment list. Night flight and instrument flight rules (IFR) operations are authorized if allowed by the AOI and if the instruments specified in § 91.205 are installed, operational, and maintained per the applicable requirements of part 91. (6)
7	190 & 191 AFS-800	All single seat, hot-air airships such as the Thunder & Colt AS-56	The PIC must hold a pilot certificate with a lighter-than-air category rating and an airborne heater privilege. The PIC must hold all required ratings or authorization and endorsements required by 14 CFR part 61. (7)
		For atypical aircraft, coordinate with AFS-800.	The pilot in command must hold _____ category and _____ class certificate or privilege. The pilot in command must hold all required ratings or authorizations and endorsements required by part 61. (7)
8	191(a), (b), (c), (d), (e), & (f) AFS-800	Large aircraft. Turbojet aircraft. Airplanes with 800 or greater total horsepower and V _{NE} greater than 250 knots.	The pilot in command must hold— (a) An appropriate type rating (if one has been established); or (b) An experimental aircraft authorization, by make and model, on their pilot certificate; or (c) A temporary letter of authorization (LOA) issued by an FAA Flight Standards Operations Inspector. (8)
9	191(a), (b), (c), (d), (e), & (f) AFS-800	Single seat or single control aircraft subject to limitation 8	A qualified instructor after providing ground and flight training may make an endorsement, to allow the airman to be pilot in command for completing a practical test for the issuance of an experimental aircraft authorization. Refer to Order 8900.1, volume 5, chapter 9, section 2 . The endorsement may allow solo operation of the aircraft. The endorsement may be valid for a period up to 30 days. The endorsement must specify the flight conditions authorized (for example, day, night, IMC) and flying area. The flying area may not exceed 3/8 of the fuel range of the aircraft. (9)
10	191 AFS-800	Issue for aircraft that require a copilot and/or flight engineer and AH-64.	Additional required flightcrew members must hold the appropriate airman certificate, that is, pilot or flight engineer. Pilots must hold _____ category and _____ class certificate. (10)
11	191 AFS-800		When filing a flight plan, the experimental nature of this aircraft must be listed in the remarks section. (11)

Table D-1. Operating Limitations			
No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
12	191(i) AFS-800		This aircraft must not be used for banner towing operations or intentional parachute jumping. (12)
13	191(a), (b), (c), (d), (e), (f), (g), & (h) AFS-800		This aircraft must not be used for towing, including, but not limited to glider towing, banner towing, target towing, or towing electronic receivers or emitters. This aircraft must not be used for intentional parachute jumping. (13)
14	191 AFS-300		If aircraft, engine, or propeller operating limitations are exceeded outside of planned test conditions, an appropriate entry will be made in the maintenance records. (14)
15	191 AFS-300	All large airplanes, turbine engine airplanes, and turbine rotorcraft.	<p>No person may operate this aircraft unless it is maintained per an inspection program meeting the scope and content described in § 91.409(f). The operator must select and identify in the aircraft maintenance records one of the following programs for the inspection of the aircraft:</p> <ul style="list-style-type: none"> (a) For type-certificated aircraft, a current inspection program recommended by the manufacturer; or (b) For former-military aircraft, an inspection program recommended by the manufacturer or North Atlantic Treaty Organization (NATO) military service; or (c) An FAA-approved inspection program. <p>Note: To extend an inspection interval, the owner/operator must submit a request for that extension with supporting documentation and data to the local FSDO and obtain concurrence from that FSDO.</p> <p>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] per [identify applicable inspection program] and found to be in a condition for safe operation." (15)</p>
		All other aircraft not described above.	<p>No person may operate this aircraft unless within the preceding 12 calendar months it has had a condition inspection performed per the scope and detail of part 43, appendix D, manufacturer or other FAA-approved programs, and was found to be in a condition for safe operation. The 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] per the [insert either: scope and detail of part 43, appendix D; or manufacturer's inspection procedures] and was 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. (15)</p>

Table D-1. Operating Limitations			
No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
16	191 AFS-300	Former military.	This aircraft must not be operated unless it is operated, inspected, and maintained per appropriate military technical publications and/or manufacturer's recommendations. (16)
17	191(i) AFS-300		An ELSA owner/operator certificated as a repairman for this aircraft under § 65.107, an appropriately rated FAA-certificated mechanic, or an appropriately rated FAA repair station may perform the condition inspection required by these operating limitations. (17)
18	191(g) AFS-300		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. (18)
19	191(a), (b), (c), (d), (e), (f), & (h) AFS-300		Only FAA-certificated repair stations, FAA-certificated mechanics with appropriate ratings, or a manufacturer as authorized by § 43.3 may perform inspections required by these operating limitations. (19)
20	191 AFS-300		The aircraft may not be operated unless the replacement for 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) applies to experimental aircraft when the required replacement times are specified in the U.S. aircraft specifications or type certificate data sheets. (b) Non-Type-Certificated Products: All articles installed in non-type-certificated products operated under an airworthiness certificate issued for an experimental purpose, in which the manufacturer has specified limits, must include in their program an equivalent level of safety for those articles. These limits must be evaluated for their current operating environment and addressed in the approved inspection program. All articles installed in non-type-certificated products in which the manufacturer has specified limits, must include in their program an equivalent level of safety for those articles. The article must be inspected to ensure the equivalent level of safety still renders the product in a serviceable condition for safe operation. (20)
21	191 AFS-300		For aircraft originally incorporating fatigue life recording systems, the owner/operator must maintain and use the system as prescribed by the aircraft manufacturer and comply with the manufacturer's fatigue life limits. (21)
22	191(c), (d), (e), (f), (h), & (i) AFS-300		The geographically responsible FSDO where the aircraft is based must be notified, and its response received in writing, before flying this aircraft after incorporation of a major change as defined by § 21.93. The FSDO may require demonstrated compliance with § 91.319(b). (22)

Table D-1. Operating Limitations

No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
23	191(g) AFS-300		<p>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 FAA Form 8130-6 to update the aircraft's file in the FAA Aircraft Registration Branch, AFS-750. All operations must be conducted under day visual flight rules (VFR) conditions over a sparsely populated area in compliance with § 91.305. 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 an aircraft maintenance record 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 maintenance 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. (23)</p>
24	187 AFS-300		<p>Conversion from one category certificate to the other must be accomplished per [<i>Reference the applicable instructions (date)</i>].</p> <p>Each conversion from one category certificate to another must be documented via a maintenance record entry. (24)</p>
25	187 AFS-300	If an inspection per § 21.187(b) is required	The operator of this aircraft must have the aircraft inspected by the FAA, or by a certificated mechanic with an appropriate airframe rating, to determine airworthiness each time the aircraft is converted from the restricted category to another category for the carriage of passengers for compensation or hire. (25)
26	191 AFS-300	Multipurpose PC/modifier procedure per paragraph 4-9 of this order.	Changing between experimental operating purposes must be accomplished per [<i>Reference the approved PC/modifier procedure, for example, ABC Aircraft Co. Experimental Operating Procedure No. 12 (dated)</i>]. (26)
			When changing between experimental operating purposes, the operator must determine that the aircraft is in a condition for safe operation and appropriate for the purpose intended. A record entry will be made by an appropriately rated person to document that finding in the maintenance records. (26)

Table D-1. Operating Limitations			
No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
27	190 & 191(i) AFS-800		The pilot may only conduct the flight maneuvers authorized in the AOI. (27)
28	191 AFS-800	Former military turbine airplanes.	<p>Preflight planning runway length requirements: Takeoff is prohibited unless takeoff planning determines it is possible to stop the airplane safely on the runway, as shown by the accelerate-stop distance data. For aircraft without accelerate-stop distance data, the airplane must be able to safely stop within the effective length of the runway, from any point during the takeoff, before reaching 105 percent of V_{MCA} or 115 percent of the power-off stalling speed in the takeoff configuration, whichever is greater. In addition, the aircraft must be able to clear all obstacles by at least 50 feet vertically.</p> <p>Landing will not be attempted unless landing planning determines that a full stop landing can be made within 60 percent of the effective length of the runway from a point 50 feet above the runway. When calculating takeoff or landing performance, corrections must be made for any runway gradient. Performance data based on still air may be corrected by taking into account not more than 50 percent of any reported headwind component and not less than 150 percent of any reported tailwind component. Calculations may not include the use of reverse thrust or drag chute. (28)</p>
29	191(d) & (e) AFS-300		<p>The owner/operator must submit an annual program letter to the geographically responsible FSDO where the aircraft is based. A copy of the current program letter and any amendments must be carried on board the aircraft any time that the aircraft is being operated.</p> <p>The program letter must include the following information:</p> <ol style="list-style-type: none"> The aircraft's home base, The name of the person responsible for the operation and maintenance of the aircraft, A list of events at which the aircraft will be [exhibited/raced] (the list may be amended as necessary), The estimated time or number of flights, and The areas over which the aircraft will be flown. (29)

Table D-1. Operating Limitations

No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
30	191 AFS-300, except AFS-800 for pilot/ passenger training program.	Ejection seat installed or aircraft originally had an ejection seat.	<p>Aircraft equipped with operational ejection seats must have external markings that ensure emergency personnel are aware of the hazard presented by the system.</p> <p>Operational ejection seat systems must be maintained and inspected per the manufacturer's procedures or U.S./NATO applicable orders. The manufacturer or military service must approve any modification to the seat or parts substitution. The manufacturer or military service must have approved the ejection seat system, as configured, for installation in the aircraft.</p> <p>Operational ejection seat systems must be secured per the manufacturer's procedures or U.S./NATO technical orders to prevent inadvertent operation of the system when the aircraft is parked or out of service.</p> <p>Person(s) acting as pilot-in-command and flightcrew members operating aircraft equipped with operational ejection seat(s), whether armed or not armed, must have successfully completed an ejection seat training program within the previous 24 calendar months prior to operations for this make and model of aircraft per AC 91-87.</p> <p>Passengers must have a safety brief prior to flight per AC 91-87. (30)</p>
31	191(d) & (e) AFS-300		<p>When an aircraft's home base is changed or there is a transfer of ownership, the owner/operator will, within 30 days:</p> <p>(a) Submit a new program letter to the geographically responsible FSDO.</p> <p>(b) If an accepted or approved inspection program is specified in these operating limitations, submit a copy to the geographically responsible FSDO. (31)</p>
32	185, 187 AFS-800	Aircraft that may be equipped with operational, jettisonable stores.	When equipped with operational jettisonable stores, flight operations are restricted to areas that meet § 91.305 and flight over densely populated areas is prohibited at all times. (32)
33	191(a) AFS-800	Aircraft that may be equipped with operational, jettisonable stores.	<p>When equipped with operational jettisonable stores, flight operations are restricted to areas that meet § 91.305.</p> <p>Flight over densely populated or congested areas is prohibited at all times.</p> <p>Operations are limited to testing the aircraft for use with the jettisonable stores.</p> <p>When not testing the jettisonable stores, each store must be removed or secured so it cannot be jettisoned. (33)</p>

Table D-1. Operating Limitations

No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
34	191(c), (d), & (e) AFS-300	All Aero Vodochody L-29 & L-39 series airplanes.	<p>Installation of explosive pylon charges (ejectors) is prohibited.</p> <p>If installed, any Emergency Stores Release Handle (ESRH) or Master Armament Safety Switch (MASS) must be disabled. Both must be disabled and disconnected from all systems. Weapon related buttons and switches must also be disabled and disconnected from all systems.</p> <p>Selection of all simulated failure modes from the rear cockpit (instructor position) must be disabled. (34)</p>
	191(c), (d), & (e) AFS-800	All BAE Hawk series airplanes.	<p>If installed, all four jettison switches must be disabled and disconnected from all systems.</p> <p>Installation of explosive pylon charges (ejectors) is prohibited.</p> <p>Flight with asymmetric wing mounted equipment is prohibited. (34)</p>
	191(a), (c), (d), & (e) AFS-300	Boeing AH-64, all series helicopters.	<p>Flights with munitions loaded are prohibited.</p> <p>All weapons systems will be disabled by:</p> <p>(a) Appropriate circuit breakers shall be pulled and secured to ensure the circuits are not inadvertently closed.</p> <p>(b) Electrical umbilical providing electrical signal to weapons shall be disconnected, and capped and stowed as appropriate.</p> <p>External stores and systems must be secured to prevent inadvertent operation of the systems whenever the aircraft is operated or parked. (34)</p>
	191(c), (d), & (e) AFS-800	All Douglas A-4 series airplanes.	<p>Installation of explosive pylon charges (ejectors) is prohibited.</p> <p>Any passenger must receive, before flight, adequate training concerning (1) any rear-seat responsibilities per the applicable flight manual, (2) "off-limits" equipment and switches in the rear-seat, and (3) any other safety-related task not covered under the ejection seat training program.</p> <p>The maximum authorized speed for aircraft operations is 10 percent below the published Mmo. In addition, any additional speed limitation imposed by any equipment must be followed; such as in cases involving avionics limitations or external equipment. (34)</p>
	191(c), (d), & (e) AFS-300	All F-5 series airplanes	<p>The emergency jettison battery must be removed or disconnected. The "jettison control" and "emergency all jettison" circuit breakers must be disconnected or secured open. The armament circuit breakers on the pedestal and other circuit breaker panels must be disconnected or secured open.</p> <p>Installation of explosive pylon charges (ejectors) is prohibited. (34)</p>

Table D-1. Operating Limitations			
No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
35	191 AFS-800	All aircraft equipped or originally equipped with drag chute, such as MiG-21, MiG-23, F-104, and F-4.	The drag chute must be maintained and packed by trained personnel. (35)
36	191 AFS-800	All aircraft equipped or originally equipped for in-flight refueling, such as KC-10, MiG-21, MiG-23, F-104, and F-4.	Fueling or defueling the aircraft with the engine operating is prohibited. (36)
37	191(d) & (e) AFS-800		Operation is restricted to airports that are within airspace classes C, D, E, or G, except in the case of a declared emergency or authorized operations under an airshow waiver. (37)
38	191 AFS-800	All aircraft using hydrazine fuel, such as F-16.	Airport operations are prohibited for aircraft equipped with a hydrazine-based emergency power unit (EPU), unless the following are met: (a) Trained ground support personnel available (that is, secure EPU before shutdown). (b) A trained emergency hydrazine response team (using the same training and guidance used by the U.S. Air Force) that is capable of responding as specified in § 139.319(h). (c) Permission from the airport manager. (38)
39	189 & 191(c), (d), (e), (g), (h), & (i) AFS-300		This aircraft is prohibited from flight with any externally mounted equipment unless the equipment is mounted in a manner that will prevent in-flight jettison. The aircraft must be configured as documented in the aircraft's flight test records or as allowed in the original manufacturer's, or military operator's aircraft limitations. If relying on the manufacturer's or military data, the aircraft must conform to the manufacturer's design and be maintained to manufacturer's or military instructions. No change in external loading for the aircraft (for example, a change in a pylon, rack, or external store) from configurations approved by the manufacturer or military operator is allowed, except to prevent jettison. Compliance with all manufacturer or original military operator limitations when any external stores or fuel tanks are installed is required. (39)

Table D-1. Operating Limitations			
No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
40	191(a) & (b) AFS-400		Enhanced Flight Vision System (EFVS) operations for the purpose of research and development and/or showing compliance with regulations are not authorized if any component associated with the instrument approach procedure being flown, or any component of the approach lighting system associated with the instrument approach, is inoperative. (40)
41	191(g) AIR-113		Except for single-place aircraft, the following placard must be displayed in the aircraft in full view of all occupants: "PASSENGER WARNING—THIS AIRCRAFT DOES NOT COMPLY WITH FEDERAL SAFETY REGULATIONS FOR STANDARD AIRCRAFT." (41)
The following limitations only apply during phase I.			
42	191(d), (e), (g), (h), & (i) AFS-800		No person may operate this aircraft for other than the purpose of meeting the requirements of § 91.319(b). The pilot in command must comply with § 91.305 at all times. This aircraft is to be operated under VMC, day only. This aircraft must be operated for at least _____ hours with at least _____ takeoffs and landings in this geographical area: [The area must be described by radius, coordinates, navigational aids, and/or landmarks. The size of the area and airports must be that required to safely conduct the anticipated maneuvers and tests.] This aircraft may only operate from [identify name of airport(s)]. (42)
43	191(d), (e), & (h) AFS-800		No person may be carried in this aircraft during flight unless that person is a required flightcrew member. (43)
44	191(g) & (i) AFS-800		Unless operating per FAA AC 90-116, <i>Additional Pilot Program for Phase I Flight Test</i> , only the minimum crew necessary to fly the aircraft during normal operations may be on board. (44)

Table D-1. Operating Limitations

No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
45	191(d), (e), (g), (h), & (i) AFS-800		<p>Upon completion of phase I flight testing, compliance with § 91.319(b) must be recorded in the maintenance records. The following or similar statement must be recorded in the maintenance records:</p> <p>"I certify that the prescribed flight test has 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.</p> <p>If aerobatic maneuvers are intended to be performed during phase II, those maneuvers must be satisfactorily accomplished and recorded in the maintenance records. Aerobatic flight testing is not complete until sufficient flight experience has been gained to establish that the aircraft is satisfactorily controllable during the aerobatic maneuver tested.</p> <p>Upon completion of flight testing, the owner/operator must make the following or similar entry in the maintenance records:</p> <p>"I certify that the following aerobatic maneuvers have been test flown, and that the aircraft is controllable throughout the maneuvers' normal range of speeds. The flight-tested aerobatic maneuvers and speeds are _____ at _____, _____ at _____, _____ at _____, and _____ at _____."</p> <p>During phase II operations, aerobatic maneuvers that were not documented per this limitation may not be performed. The owner may place the aircraft back into phase I for the sole purpose of adding additional aerobatic maneuvers to the aircraft authorized maneuvers.(45)</p>
46	191(d), (e), (g), (h), & (i) AFS-800		<p>If the aircraft will have removable externally mounted equipment, it must be test flown in all configurations. An entry must be made in the maintenance records indicating the configurations flight tested, unless the original manufacturer's flight test data for that equipment is included in the aircraft limitations. If relying on the manufacturer's data, the aircraft and load must conform to the manufacturer's design and be maintained to manufacturer's instructions. Otherwise, the aircraft owner/operator must conduct test flights in all configurations and make an entry in the maintenance records indicating the configurations flight tested. (46)</p>
The following limitations only apply during phase II.			
47	191 AFS-800		<p>Kinds of operations authorized: Day VFR flight operations are authorized. (47)</p>
48	191 AFS-800	For limitations 48-50, refer to paragraphs D-4.f of this appendix.	<p>Night flight operations are authorized if the instruments specified in § 91.205(c) are installed, operational, and maintained per the applicable requirements of part 91. (48)</p>
49	191(b), (f), (g), (h), & (i) AFS-800		<p>Instrument flight operations are authorized if the instruments specified in § 91.205(d) are installed, operational, compliant with the performance requirements of, and maintained per the applicable regulations. All maintenance or inspection of this equipment must be recorded in the aircraft maintenance records and include the following items: date, work performed, and name and certificate number of person returning aircraft to service. (49)</p>

Table D-1. Operating Limitations

No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
50	191 (a), (c), (d), & (e) AFS-800	Aircraft described in paragraph D-4.f	IFR flight operations limited to VMC are authorized if the instruments specified in § 91.205(d) are installed, operational, compliant with the performance requirements of, and maintained per the applicable regulations. The pilot in command must have a method to comply with the § 91.319(c) prohibition from operating over densely populated areas or in congested airways. All maintenance or inspection of this equipment must be recorded in the aircraft maintenance records and include the following items: date, work performed, and name and certificate number of person returning aircraft to service. (50)
		Aircraft not described in paragraph D-4.f	Instrument flight operations are authorized if the instruments specified in § 91.205(d) are installed, operational, compliant with the performance requirements of, and maintained per the applicable regulations. The pilot in command must have a method to comply with the § 91.319(c) prohibition from operating over densely populated areas or in congested airways. All maintenance or inspection of this equipment must be recorded in the aircraft maintenance records and include the following items: date, work performed, and name and certificate number of person returning aircraft to service. (50)
51	191(c), (d), (e), (f), (g), (h), & (i) AFS-800		The pilot in command must not perform any maneuvers that have not been flight tested or operate the aircraft outside the weight, airspeeds, and center of gravity limits tested. (51)
52	191(d), (e), (g), (h) & (i) AFS-800	Aircraft described in paragraph D-4f. AFS-800	The carriage of passengers is prohibited. (52)
53	191(a), (b) & (c) AFS-800	PC/modifier procedure per paragraph 4-9 of this order.	All flights must be conducted within the geographical area described in [describe the PC/modifier approved operating procedure, for example, ABC Aircraft Co. Experimental Operating Procedure No. 12 (dated)]. (53)
			All flights must be conducted within the geographical area described as follows (note that there may be areas within the geographical area that are not suitable for operation) The area must be described by radius, coordinates, navigational aids, and/or landmarks. The size of the area must not be more than one-half the range of the aircraft from the aircraft's home base airport. Flights for maintenance, as defined in § 1.1, of the aircraft are permitted outside the defined area. (53)

Table D-1. Operating Limitations			
No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
54	191(d), (e), (f), (g), (h), & (i) AFS-800	Aircraft described in paragraph D-4.f.	<p>All proficiency/practice flights must be conducted within the geographical area described as follows: _____, but that area will not be more than one-half the range of the aircraft from the aircraft's home base airport.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Proficiency flying outside of the area stated above for organized formation flying, training, or pilot checkout in conjunction with a specific event. 2. Flights for maintenance of the aircraft are permitted outside the defined proficiency area. (Maintenance, as defined in § 1.1, is the reference for the purpose of these flights.) The maintenance performed in connection with the flight must be recorded in the maintenance records and include the following items: date, work performed, and name and certificate number of person returning aircraft to service. (54)
55	191 AFS-800	AH-64, all series	The pilot in command must comply with 14 CFR 91.305 at all times. (55)
		Refer to paragraph D-4.f of this appendix.	Flight over a densely populated area or in a congested airway is prohibited. (55)
		All lighter-than-air. All gliders. Amateur-built. Primary kit-built. ELSA.	Flight over a densely populated area or in a congested airway is authorized for the purpose of takeoff or landing; or unless sufficient altitude is maintained to make a safe emergency landing in the event of a power unit failure, without hazard to persons or property on the ground. (55)
		All others	<p>Flight over a densely populated area or in a congested airway is authorized per § 91.319(c) only for the purpose of takeoff and landing.</p> <p>The area on the surface described by the term "only for the purpose of takeoff and landing" is the traffic pattern.</p> <p>For the purpose of this limitation, the term "only for the purpose of takeoff and landing" does not allow multiple traffic patterns for operations such as training or maintenance checks. This <i>does not</i> restrict a go-around/rejected landing for safety reasons.</p> <p>When avoiding populated areas, aircraft speed and weight must be considered. The information in FAA Order 8900.1, <i>Flight Standards Information Management System (FSIMS)</i>, regarding set-back distances from spectator areas for aviation events such as air shows or air races may assist in determining a suitable space to fly the aircraft. (55)</p>
56	191(a) & (b) issue limitation 56, 57, or 58 AFS-800	Only for RVSM certification purposes.	Operations in Reduced Vertical Separation Minimum (RVSM)-designated airspace may be allowed under § 91.180(b) for aircraft certification and development purposes. Refer to part 91 and the Aeronautical Information Manual. (56)

Table D-1. Operating Limitations			
No.	Certification Basis (14CFR part 21) / Responsible Office	Notes/ Applicability	Operating Limitation
57	191(a), (b), (c), (d), (e), (f), & (g) AFS-800	Only for aircraft capable of non-stop climb to FL430 and not RVSM compliant.	Operations in RVSM-designated airspace may be allowed under § 91.180(b) for climbing/descending through RVSM flight levels without intermediate level-off to or from flight levels above RVSM airspace. Refer to part 91 and the Aeronautical Information Manual. (57)
58	191(a), (b), (c), (d), (e), (f), & (g) AFS-800	Aircraft capable of flight above FL280 and not capable of nonstop climb to FL430 and not RVSM compliant.	Flight in RVSM-designated airspace is prohibited. (58)
59	191(d) AFS-800	Aircraft not described in paragraph D-4.f.	No person may be carried in this aircraft during the exhibition of the aircraft's flight capabilities, performance, or unusual characteristics at air shows, or for motion picture, television, or similar productions, unless essential for the purpose of the flight. (Refer to FAA Order 8900.1.) Persons may be carried during flights to and from any event or during proficiency/currency flying, limited to the design seating capacity of the aircraft and subject to the regulatory prohibition on compensation. (59)
60	191 AFS-800	Glider.	The following placard must be displayed in the cockpit, in full view of the pilot: "Note: No person may exceed the designer's or builder's recommended limitations as follows: maximum gross weight _____; CG limits _____; airplane tow speed _____; maximum airspeed in smooth air _____; and maximum airspeed in rough air _____." (60)
61	191(a), (b) & (c) AFS-800	PC/modifier procedure per paragraph 4-9 of this order	Persons may be carried per [describe the production certificate holder's approved operating procedure, for example, ABC Aircraft Co. Experimental Operating Procedure No. 12 (dated)]. (61)
		All others	No person may be carried in this aircraft during flight unless that person is essential to the purpose of the flight. (61)