ERA22FA279

AIRWORTHINESS

Group Chair's Factual Report – Attachment 3

FAA Order 8130.2H Chapter 4 Section 10 and Appendix C

Section 10. Certification and Operation of Aircraft Under the Experimental Purpose of Exhibition or Air Racing

464. General. Under the provisions of § 21.191(d), exhibition aircraft are defined as aircraft that exhibit the aircraft's flight capabilities, performance, or unusual characteristics at air shows, fly-ins, and aviation 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. Under the provisions of § 21.191(e), air racing aircraft are defined as aircraft that participate in air races, including (for such participants) practicing for such air races and flying to and from racing events.

a. Exhibition. A certificate for experimental exhibition must only be issued when an aircraft is to be used for valid exhibition purposes. Included in those purposes are organized air shows, organized fly-in activities, organized exhibitions, youth education events, organized aerobatic competition, fly-ins or meets, and movie or television productions. The duration of an airworthiness certificate for exhibition may be unlimited.

b. Air Racing. A certificate for experimental air racing must only be issued when an aircraft is to be used for valid air racing purposes, including organized air races or sail plane competitive events. The duration of an airworthiness certificate for air racing may be unlimited.

c. Home Base Changes or Ownership Transfers. When an aircraft's home base is changed or there is a transfer of ownership, the owner/operator must notify the local FSDO having jurisdiction over the area in which the aircraft will be based within 30 days.

(1) The owner/operator must provide the FSDO with a copy of the FAA-accepted or approved inspection program (if required for the aircraft). The person responsible for scheduling the inspections must be identified in the program letter to the FSDO. The gaining FSDO should accept the previously accepted or approved program, but may review it to ensure the adequacy of the program.

(2) The gaining FSDO will not require the aircraft's special airworthiness certificate and operating limitations to be reissued, unless the aircraft is in Phase I test flight operations, FAA Headquarters determines that the current limitations require reissuance, or the owner requests reissuance or amendment.

(3) Upon transfer of ownership, the gaining FSDO will require the new owner to submit a new program letter to ensure the new owner is familiar with the limitations of the experimental exhibition aircraft.

(4) Copies of the aircraft registration, special airworthiness certificate, and operating limitations are on file with AFS-750, and the aircraft owner does not need to provide copies to the gaining FSDO.

465. Former Military Aircraft.

a. Background. Many of the aircraft presented for airworthiness certification for the purpose of exhibition or air racing are former military aircraft, both U.S. and non-U.S. The FAA acknowledges the significant role military aircraft have played in our aviation heritage and the importance of preserving their legacy for future generations. The exhibition of former military aircraft at aviation events for demonstration and display provides the public a rare view into our aviation past. Therefore, it is the policy of the FAA to permit the operation of former military aircraft for civilian use, consistent with the need to safeguard the general public.

> **Note:** Not all former military aircraft require experimental airworthiness certificates. Some models have a valid TC and are eligible for other airworthiness certificates.

b. Aircraft Familiarization. With former military aircraft, becoming familiar with the aircraft is particularly important given the variety of aircraft types, variants of those models, possible modifications, operational history, and possible long-term storage. The FAA representative should become familiar with the aircraft type and its operational history before initiating inspections.

(1) Identify the aircraft model and/or series, as well as the type of engine(s), propellers, and other systems installed, as appropriate. Obtain as much historical information as possible to include serial numbers, overhaul dates, airframe cycles, and engine time and cycles.

(2) Review accident and incident data for the aircraft type. Data can be retrieved from the NTSB, the FAA, and other international and military sources.

(3) Review available aircraft type club information.

(4) Review the ownership history of the aircraft, if applicable. This may provide information on how the aircraft was previously operated and maintained, which may have implications for the airworthiness inspection. The current ownership status may also affect the operation of the aircraft (for example, leasing agreements).

> **Note:** It is important to become familiar with the scope of the restoration, repairs, and maintenance conducted by or for the applicant. It is also helpful to become familiar with the availability of spare parts and any required ground equipment before conducting the formal records inspection.

c. Limitations. To ensure the safe operation of these aircraft and minimize adverse environmental impact, the FAA has established operating limitations. Operating limitations developed jointly by AIR and AFS are contained in appendix C to this order.

d. Maintenance and Inspections. The ability of civilian operators to maintain and operate these aircraft depends on their background and experience, training and facilities, availability of technical manuals and design information, and the complexity of the aircraft involved.

e. Environmental Impact. Applicants for certification of experimental exhibition aircraft must be advised that these aircraft were designed and manufactured without the acoustical treatment provided for current commercial and business aircraft. They also must be advised of industry-developed procedures and guidelines designed to minimize the impact such aircraft impose at airports and in the surrounding communities. Aircraft operators must accept the responsibility for operating their aircraft in a manner that reduces the environmental impact to the lowest practicable level consistent with safe operation.

466. Brokering. Section 21.191(d) was not intended to allow for the brokering or marketing of experimental aircraft. This includes individuals who manufacture, import, or assemble aircraft, and then apply for and receive experimental exhibition airworthiness certificates so they can sell the aircraft to buyers. Section 21.191(d) *only* provides for the exhibition of an aircraft's flight capabilities, performance, or unusual characteristics at air shows and for motion picture, television, and similar productions. Persons processing an experimental certificate application for exhibition must ensure it is for the purposes specified under § 21.191(d), and is from the registered owners who will exhibit the aircraft for those purposes. Applicants also must provide the applicable information specified in § 21.193.

467. Ejection Seats. Pilots operating aircraft and passengers of aircraft equipped with an ejection propellant system, whether armed or not armed, must satisfactorily complete an FAA-approved ejection seat training program. Questions concerning specific aircraft and ejection seat training approvals will be referred to AFS-800.

468. Special Initial Certification Requirements. The following provides information and guidance concerning the initial airworthiness certification for experimental aircraft for the purpose of exhibition or air racing. These steps are in the normal order of occurrence for the certification of these aircraft.

a. Demilitarization of Former Military Aircraft. For demilitarization of former military aircraft, refer to paragraph 212b of this order.

b. Records Inspection. In addition to the records inspection requirements of paragraph 402b of this order, the FAA must—

(1) Obtain from the applicant a program letter in accordance with § 21.193, setting forth the purpose(s) for which the aircraft will be used. The program letter must be specific as to the intended use under the purpose requested and must include the information as required by § 21.193. Refer to appendix B to this order for additional information.

(2) Ensure the applicant has written in or translated into the English language all of the necessary maintenance, inspection, operating, and flight manuals required to safely operate the aircraft.

(3) Verify maintenance records reflect records of inspections, overhauls, repairs, time-in-service on articles and engines, etc., and that all records are current. The FAA will sign the inspection program noting its approval/acceptance of that program. An entry in the aircraft logbook is not required.

(4) Verify maintenance and modification records to include records for flight control balancing, fabricated parts, and supporting engineering documentation, if required.

(5) For airplanes with a gross takeoff weight of more than 12,500 pounds, turbojet airplanes, turbopropeller-powered multiengine airplanes, and turbine-powered rotorcraft, verify the applicant has an FAA-approved inspection program or a current inspection program recommended by the manufacturer that meets the requirements of § 91.409. However, the owner or operator of a turbine-powered rotorcraft may elect to use the inspection provisions of § 91.409(a), (b), (c), or (d) instead of an inspection option of § 91.409(f).

> **Note:** A special airworthiness certificate will not be issued for these aircraft without an FAA-approved inspection program, if applicable.

(6) Verify the appropriately rated FAA-certificated mechanic has made an entry in the aircraft records documenting the applicable inspections as referenced in paragraph 468c of this order for all aircraft (including new aircraft) within 60 days before submitting FAA Form 8130-6.

(7) Review the applicant's weight and balance data for accuracy and currency for the aircraft submitted.

(8) Address the following special considerations, if applicable:

(a) Examine any related documents from U.S. Customs and Border Protection and the ATF to determine if the aircraft was imported as an aircraft and to determine the configuration at time of import. If the aircraft was not imported as an aircraft or if the configuration is not stated on Form ATF-6, the aircraft is not eligible for an airworthiness certificate.

(b) Review the inspection program. Discuss the applicable standard for the aircraft with the applicant. Proper ground support equipment, specialized tooling for maintenance, airframe fatigue life program compliance, and engine thrust measurement process may also be needed. Ensure the program addresses aging of the aircraft and its components. Refer to § 91.415 and AC 43-209, *Recommended Inspection Procedures for Former Military Aircraft* (current edition), for additional information on aircraft inspection programs.

> **Note:** Items that have specified limits must be inspected to ensure the equivalent level of safety still renders the product in a serviceable condition for safe operation.

(c) Verify spare part records.

(d) Verify installed avionics records.

(e) Verify minimum equipment for flight requirements.

(f) Verify status of ejection seat system to include type, original equipment manufacturer support, maintenance, and component life limits.

(g) Verify any parachute(s) are in compliance with the parachute requirements in § 91.307 and ensure it is rated for the ejection seat being used.

(h) Verify the drag chute installation records reflect installation per applicable military guidance.

(i) Ensure external stores were approved by the military service where the aircraft was operated. Ensure external stores are mounted in a manner that will prevent in-flight jettison and the cockpit jettison controls are disabled.

(j) Determine that the aircraft has been flight tested, if required. If it has not been flight tested, consider requiring all flight tests and flight test protocols follow the intent and scope of applicable military functionality test procedures. Flight test duration should be a minimum of 10 hours, but may be adjusted as needed to accomplish functionality and reliability testing and to verify the aircraft can be operated safely. The flight test must be recorded in the aircraft records and certify that the requirements of § 91.319(b) have been met. Flight test time is included as "time-in-service," as defined by part 1.

(k) Determine the aircraft complies with all applicable ADs. If the experimental aircraft has a type-certificated product or article installed, it should comply with any applicable ADs for that product or article.

(l) Establish that all required documentation and records have been provided for the aircraft.

1 Ensure the operator has the latest flight manual, equipment list, and maintenance records and manuals as required by certain airworthiness parts of 14 CFR.

2 Ensure the existence of a complete set of applicable military manuals (that is, U.S. Air Force, Naval Air Systems Command (NAVAIR), or North Atlantic Treaty Organization (NATO)), inspection and maintenance manuals for the aircraft, and engine manuals.

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

4 Review the aircraft inspection program to verify compliance with the latest version of applicable manuals or equivalent documents.

c. Aircraft Inspection. The FAA will perform an inspection to the extent necessary to ensure a prior inspection of the aircraft and aircraft systems has been performed in accordance with the records inspection requirements as identified in paragraph 402b of this order. The FAA will verify instruments, instrument markings, and placards are as required by 14 CFR and are identified in the English language. In addition, the FAA will verify all measurements are converted to standard U.S. units of measure for those instruments necessary for operation in the U.S. air traffic system (for example, airspeed in knots, altimeters in feet, and distance measuring equipment in nautical miles).

Note: Depending on the intended operation, the applicable reference would be § 91.205(b) for VFR (day); § 91.205(c) for VFR (night); and § 91.205(d) for instrument flight rules (IFR). Operators should be alerted that there are specific requirements under part 91 for maintenance and inspection of the various aircraft instruments, and that those requirements are applicable for these aircraft if the instruments are installed, for example, §§ 91.173 through 91.187, 91.215, 91.217, 91.219, 91.411, 91.413, etc.

469. Certification Procedures.

a. Once it has been determined that the aircraft meets the requirements for the special airworthiness certification requested, the FAA must—

(1) Make an aircraft record entry showing the following, or a similarly worded, statement: "I find this aircraft meets the requirements for a special airworthiness certificate for the purpose(s) of [identify purpose(s)], and have issued a special airworthiness certificate and operating limitations dated _____. The next inspection is due _____. Signed: John Doe, Aviation Safety Inspector, NM48."

(2) Issue the special airworthiness certificate and appropriate operating limitations in accordance with this order.

b. Denial. If the aircraft does not meet the certification requirements and the special airworthiness certificate is denied, the FAA will provide a letter to the applicant stating the reasons for denial and, if feasible, identify which steps may be accomplished to meet the certification requirements. Should this occur, a copy of the denial letter will be attached to FAA Form 8130-6 and forwarded to AFS-750, and made a part of the aircraft's record.

c. Phases. For the purpose of this section—

(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. Modifications that invalidate Phase II limitations are—

(a) Structural modifications;

(b) Aerodynamic modifications, including externally mounted equipment except as permitted in operating limitation No. 16 (refer to appendix C to this order); and

(c) Change of engine make, model, or power rating (thrust or horsepower).

Note 1: The owner/operator may return the aircraft to Phase I to flight test specific items as required by these limitations without invalidating the issued limitations; however, major modifications such as those listed above may require new operating limitations in accordance with operating limitation No. 35 (refer to appendix C to this order).

Note 2: The FAA may elect to process the aircraft on a one-time certification basis, for example, via the issuance of only one special airworthiness certificate. In these instances, when issuing the special airworthiness certificate for the purpose(s) of exhibition and/or air racing, the operating limitations will be prescribed in two phases in the same document.

470. Issuance of Experimental Exhibition or Air Racing Operating Limitations. Refer to appendix C to this order.

471.-472. Reserved.

Section 11. Certification and Operation of Aircraft Under the Experimental Purpose(s) of Research and Development, Showing Compliance With Regulations, Crew Training, Market Surveys, and Operating Kit-Built Aircraft

473. General. Under the provisions of § 21.191(a), R&D aircraft are defined as aircraft that test new design concepts, aircraft equipment, installations, operating techniques, or new uses for aircraft. Under the provisions of § 21.191(b), show compliance aircraft are defined as aircraft that conduct flight tests and other operations to show compliance with the regulations. This includes flights to show compliance for the issuance of TCs and STCs, major design changes, and function and reliability requirements. Under the provisions of § 21.191(c), crew training aircraft are defined as aircraft involved in the training of the applicant's flightcrews. Under the provisions of § 21.191(f), market survey aircraft are defined as aircraft that are used for conducting market surveys, sales demonstrations, and customer crew training as provided for in § 21.195. Under the provisions of § 21.191(h), operating kit-built aircraft is defined as operation of a PCA that meets the criteria of § 21.24(a)(1) that was assembled by a person from a kit manufactured by the holder of a PC for that kit, without the supervision and quality system of the PC holder under § 21.184(a). Unless further defined in paragraphs 473a through e of this order, the duration of an experimental certificate for R&D, showing compliance with regulations, crew training, or market surveys are effective for 1 year or less after the date of issuance. The duration of an experimental certificate for operating primary kit-built aircraft is unlimited.

a. Research and Development. Any aircraft would be eligible for an experimental certificate under this purpose. Although the operations may eventually lead to a TC, they may be conducted by the applicant only as a matter of research or to determine whether an idea warrants further development. In addition to the operations specified in § 21.191(a), the operation of a chase plane, a tanker used for in-flight icing tests, or other aircraft not otherwise eligible for a standard or an experimental certificate (R&D), but necessary for use in direct connection with the R&D project, is considered to be within the scope of this purpose. Aircraft currently certificated in the experimental category for the purposes of exhibition or air racing also may be

Table C-1. Operating Limitations

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
All Operations			
1	184, 185, 189, 190, 191	AIR-113	This aircraft does not meet the airworthiness requirements specified in Annex 8 to the Convention on International Civil Aviation. Operations in civil airspace outside of the United States will require the written permission of the applicable civil aviation authorities (CAA). That written permission must be carried aboard the aircraft together with the U.S. airworthiness certificate and, upon request, be made available to an FAA inspector or the CAA in the country of operation. Operations may be further restricted by the foreign CAA. 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 CAA when operating in its airspace. (1)
2	190 & 191	AIR-113	No person may operate this aircraft for any other purpose specified on the face of FAA Form 8130-7. These operating limitations do not provide any relief from any applicable law or regulation. This aircraft must be operated in accordance with 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 and attached operating limitations are 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. 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 inherent military training activities, not civil activities. The FAA makes the distinction between the authorized flights for experimental purposes, as described in the program letter, and PAO. Before operating this aircraft under this special airworthiness certificate following a PAO, the aircraft must be returned via an approved method to the condition and configuration at the time of airworthiness certification. This action must be documented in the aircraft records. The aircraft records and entries must clearly differentiate between a civil experimental flight per this certificate and any other flights. (3)
4	191(g)	AFS-800	No person may operate this aircraft for other than the purpose of meeting the requirements of § 91.319(b) during phase I flight testing, and for recreation and education during phase II operations. (4)

Table C-1. Operating Limitations (Continued)

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
5	190	AFS-800	This aircraft may only be operated in accordance with 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 in accordance with the applicable requirements of part 91. (5)
6	190 & 191	AFS-300	Application to amend these operating limitations must be made to the local Flight Standards District Office (FSDO) or Manufacturing Inspection District Office (MIDO). (6)
7	190 & 191	For atypical aircraft, coordinate with AFS-800.	The pilot in command of this aircraft 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	All large aircraft. All turbojet airplanes. Airplanes with 800 or greater total horsepower and V_{NE} greater than 250 knots. AFS-800	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. For single seat or single control aircraft, a qualified instructor may make a logbook endorsement, to allow the airman to be PIC, for the purpose of completing a practical test for the issuance of an experimental aircraft authorization. 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 (e.g. day, night, IMC) and flying area. The flying area may not exceed 3/8 the fuel range of the aircraft. (8)
9	191	Issue for aircraft that require a copilot and/or flight engineer. AFS-800	Additional required flightcrew members must hold the appropriate airman certificate, that is, pilot or flight engineer. They must meet the qualification, training, and recency experience requirements of part 61 or part 63 as appropriate. Pilots must hold _____ category and _____ class certificate. (9)
10	191	AFS-800	When filing a flight plan, the experimental nature of this aircraft must be listed in the remarks section. (10)
11	191(i)	AFS-800	This aircraft must not be used for banner towing operations or intentional parachute jumping. (11)
12	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. (12)

Table C-1. Operating Limitations (Continued)

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
13	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 aircraft records. (13)
14	191	All large airplanes, turbine engine airplanes, and turbine rotorcraft. AFS-300	No person may operate this aircraft unless it is maintained in accordance with 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: (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. 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. 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." (14)
		All other aircraft not described above. AFS-300	No person may operate this aircraft unless within the preceding 12 calendar months it has had a condition inspection performed in accordance with the scope and detail of 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] in accordance with 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. (14)
15	191	Former military. AFS-300	This aircraft must not be operated unless it is operated, inspected, and maintained in accordance with appropriate military technical publications and/or manufacturer's recommendations. (15)
16	191(i)	AFS-300	An experimental LSA 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. (16)

Table C-1. Operating Limitations (Continued)

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
17	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. (17)
18	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. (18)
19	191(a), (b), (c), (d), (e), (f), (g), (h), & (i)	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. (19)
20	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. (20)
21	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). (21)

Table C-1. Operating Limitations (Continued)

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
22	191(g)	AFS-300	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. 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 a detailed aircraft logbook and maintenance records entry describing the change before the test flight. Following satisfactory completion of the required number of flight hours in the flight test area, the pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with § 91.319(b) must be recorded in the aircraft records with the following, or a similarly worded, statement: "I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds V_{SO} _____, V_X _____, and V_Y _____, and the weight _____, and CG location _____ at which they were obtained." (22)
23	191	Former military. AIR-113	No weapons or special military mission systems may be added to the aircraft.(23)
24	187 & 191	Multipurpose. or PC/modifier procedure per paragraph 475 of this order. AFS-300	When changing between operating purposes of a multipurpose certificate, 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 aircraft records. (24) or Changing between operating purposes of a multipurpose certificate must be accomplished in accordance with [describe the production certificate holder's approved operating procedure, for example, ABC Aircraft Co. Experimental Operating Procedure No. 12 (dated)]. (24)
25	190 & 191(i)	AFS-800	The pilot may only conduct the flight maneuvers authorized in the AOI. (25)

Table C-1. Operating Limitations (Continued)

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
26	191	Former military turbine airplanes. AFS-800	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. 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. (26)
27	191(d) & (e)	AFS-300	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. The program letter must include the following information: • 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. (27)

Table C-1. Operating Limitations (Continued)

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
28	191	Ejection seat installed or aircraft originally had an ejection seat. AFS-300, except AFS-800 for pilot/passenger training program.	Aircraft equipped with live ejection seats must be clearly externally marked to ensure emergency personnel are aware of the hazard presented by the system. Live ejection seat systems must be maintained and inspected in accordance with 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. Live ejection seat systems must be secured in accordance with the manufacturer's procedures or U.S./NATO technical orders to prevent inadvertent operation of the system any time the aircraft is parked or out of service. Pilots operating aircraft and passengers of aircraft equipped with an ejection propellant system, whether armed or not armed, must satisfactorily complete an FAA-approved ejection seat training program for the pilot and the passenger.(28)
29	191(d) & (e)	AFS-300	When an aircraft's home base is changed or there is a transfer of ownership, the owner/operator will, within 30 days— • Submit a new program letter to the geographically responsible FSDO. • If an accepted or approved inspection program is specified in these operating limitations, submit a copy to the geographically responsible FSDO. (29)
30	191	All aircraft equipped or originally equipped with drag chute, such as MiG-21, MiG-23. F-104. F-4. AFS-800	The drag chute must be maintained and packed by trained personnel. (30)
31	191	All aircraft equipped or originally equipped for in-flight refueling, such as MiG-21. MiG-23. F-104. F-4. AFS-800	Fueling the aircraft with the engine operating is prohibited. (31)

Table C-1. Operating Limitations (Continued)

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
32	191(d) & (e)	AFS-800	Operation is restricted to airports that are within airspace class C, D, E, or G, except in the case of a declared emergency or authorized operations under an airshow waiver. (32)
33	191	All aircraft using hydrazine fuel, such as F-16. AFS-800	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. (33)
The following limitations only apply during phase I.			
34	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 must be that required to safely conduct the anticipated maneuvers and tests.] This aircraft may only operate from [identify name of airport(s)]. (34)
35	191(d), (e), & (h)	AFS-800	No person may be carried in this aircraft during flight unless that person is a required flightcrew member. (35)
36	191(g) & (i)	AFS-800	Unless operating in accordance with AC 90-116, *Additional Pilot Program for Phase I Flight Test*, only the minimum crew necessary to fly the aircraft during normal operations may be on board. (36)
37	191(d), (e), (h), & (i)	AFS-800	Upon completion of phase I flight testing, the following or similar statement must be recorded in the aircraft records: "I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous operating characteristics or design features, and is safe for operation. The flight test was completed under the following conditions: maximum operating weight, maximum demonstrated airspeed, minimum demonstrated airspeed, and center of gravity range." (37)

Table C-1. Operating Limitations (Continued)

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
38	191(g)	AFS-800	Following satisfactory completion of the required number of flight hours in the flight test area, the pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with § 91.319(b) must be recorded in the aircraft records with the following, or a similarly worded, statement: "I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous operating characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds V_{SO} _____, V_X _____, and V_Y _____, and the weight _____ and CG location _____ at which they were obtained." (38)
39	191(d), (e), (g), & (i)	Aerobatic. AFS-800	During phase I test flight operations, aerobatic maneuvers intended to be performed during phase II must be satisfactorily accomplished and recorded in the aircraft 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. Upon completion of flight testing, the owner/operator must make the following or similar entry in the aircraft records: "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 _____." 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. (39)
40	191(d), (e), (g), (h), & (i)	AFS-800	If the aircraft will have removable externally mounted equipment, it must be test flown in all configurations. An entry must be made in the aircraft 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 aircraft records indicating the configurations flight tested. (40)

Table C-1. Operating Limitations (Continued)

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
The following limitations only apply during phase II.			
41	191	Refer to paragraphs 3 and 5c of this appendix. AFS-800	Day VFR flight operations are authorized. Night flight operations are authorized if the instruments specified in § 91.205(c) are installed, operational, and maintained in accordance with the applicable requirements of part 91. (41)
		191(b), (f), (g), (h), & (i) AFS-800	Instrument flight operations are authorized if the instruments specified in § 91.205(d) are installed, operational, and maintained in accordance with the applicable requirements of part 91. 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. (41)
		191(a), (c), (d), & (e) AFS-800	Instrument flight operations are authorized if the instruments specified in § 91.205(d) are installed, operational, and maintained in accordance with the applicable requirements of part 91. 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. (41)
42	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. (42)
43	191(d), (e), (g), (h), & (i)	Issue if applicable, refer to paragraphs 3 & 5c of this appendix. AFS-800	The carriage of passengers is prohibited. (43)
44	191(a), (b), (c), (d), (e), (f), (g), (h), & (i)	Issue if applicable, refer to paragraphs 3 & 5c of this appendix. or PC/modifier procedure per paragraph 475 of this order. AFS-800	All flights must be conducted within the geographical area described as follows (there may be areas within the geographical area that are not suitable for operation and may include ingress/egress routes). 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. Flight routes may be defined beyond this range for moving the aircraft to a maintenance facility that is identified in the program letter. (44) or All flights must be conducted within the geographical area described in [describe the production certificate holder's approved operating procedure, for example, ABC Aircraft Co. Experimental Operating Procedure No. 12 (dated)]. (44)

Table C-1. Operating Limitations (Continued)

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
45	191(d) & (e)	Unable to comply with § 91.117(a) in normal cruise configuration. Manufacturer's or country of origin's emergency checklist requires bailout or ejection in the event of an engine or other system failure. Aircraft in which a single system failure will render the aircraft uncontrollable. Aircraft that routinely perform PAO. AFS-800	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. An exception is permitted for proficiency flying outside of the area stated above for organized formation flying, training, or pilot checkout in conjunction with a specific event listed in the applicant's program letter (or amendments). 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 aircraft records and include the following items: date, work performed, and name and certificate number of person returning aircraft to service. (45)

Table C-1. Operating Limitations (Continued)

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
46	191	Refer to paragraph 5c of this appendix. AFS-800	Flight over a densely populated area or in a congested airway is prohibited. (46) or
		All lighter-than-air. All gliders. Amateur-built. Primary kit-built. Experimental LSA.	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. (46)
		All others	Flight over a densely populated area or in a congested airway is authorized in accordance with § 91.319(c) only for the purpose of takeoff and landing. The area on the surface described by the term "only for the purpose of takeoff and landing" is the traffic pattern. 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 *does not* restrict a go-around/rejected landing for safety reasons. When avoiding populated areas, aircraft speed and weight must be considered. The information in FAA Order 8900.1, *Flight Standards Information Management System (FSIMS)*, 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. (46)
47	191(a) & (b) issue limitation 47, 48 or 49	Only for RVSM certification purposes. AFS-800	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. (47)
48	191(a), (b), (c), (d), (e), (f), & (g)	Only for aircraft capable of non-stop climb to FL430. AFS-800	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. (48)
49	191(a), (b), (c), (d), (e), (f), & (g)	Aircraft capable of flight above FL280 and not capable of nonstop climb to FL340. AFS-800	Flight in RVSM-designated airspace is prohibited. (49)

Table C-1. Operating Limitations (Continued)

No.	Certification Basis (14 CFR part 21)	Notes/Applicability/ Responsible Office	Limit
50	191(d), (e), (g), (h), & (i)	Other than former military. 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 aircraft limitations. If relying on the manufacturer's data, the aircraft must conform to the manufacturer's design and be maintained to manufacturer's instructions. (50)
51	189 & 191(c), (d), & (e)	Former military. 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. Installation of external stores (pylon and equipment) or external fuel tanks not approved by the manufacturer or the original military operator is prohibited. 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 original military operator is allowed, except to prevent jettison. (51)
52	191(d)	AFS-800	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. (52)
53	191	Glider. AFS-800	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 _____." (53)
54	191(a)	AFS-800	No person may be carried in this aircraft during flight unless that person is essential to the purpose of the flight. (54)
55	191(b) & (c)	AFS-800	No person may be carried in this aircraft during flight unless that person is essential to the purpose of the flight. (55) or Persons may be carried in accordance with [describe the production certificate holder's approved operating procedure, for example, ABC Aircraft Co. Experimental Operating Procedure No. 12 (dated)]. (55)