

ERA22FA279

AIRWORTHINESS

Group Chair's Factual Report - Attachment 5
FAA Advisory Circular 43-209A



U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Recommended Inspection
Procedures for Former Military
Aircraft

Date: 4/12/13

AC No: 43-209A

Initiated by: AFS-300

Change:

1. PURPOSE. This advisory circular (AC) is for the development of inspection program requirements for the certification of former military aircraft in the experimental category for the purpose(s) of exhibition and air racing that operate in the United States in accordance with Title 14 of the Federal Code of Regulations (14 CFR) part 21, § 21.191(d) and (e). This AC is not mandatory and does not constitute a regulation. This AC describes an acceptable means, but not the only means, for developing inspection program requirements for former military aircraft.

2. CANCELLATION. This AC cancels AC 43-209, L-39 Albatross Military Jet Recommended Inspection Program, dated October 16, 2003.

3. BACKGROUND. Title 49 of the United States Code (49 U.S.C.) § 44701 is the primary authority for Federal aviation regulations. This section instructs the FAA Administrator to promote the safe flight of civil aircraft in air commerce through regulations and standards prescribed in the interest of safety. Because of the large number of former military aircraft operating in the experimental exhibition category in U.S. airspace, the owners, operators, and industry leaders of these aircraft requested the FAA to standardize the scope and detail of the inspection procedures.

4. DISCUSSION. This AC is advisory in nature and should be used in conjunction with the current operating limitations.

a. Inspection Program Goals. The goal of an inspection program is to maintain these aircraft in a condition for safe operation. The FAA is committed to assisting the owners/operators of these aircraft to keep them flying, while balancing safety of the owners/operators and the public.

b. Experimental Certificates. The FAA acknowledges that, in accordance with 14 CFR part 43, § 43.1(b), requirements do not apply to any aircraft for which the FAA has issued an experimental certificate, unless the FAA has previously issued a different kind of airworthiness certificate for that aircraft. Inspection programs for aircraft operating under § 21.191 (d) and (e) will be in accordance with current FAA-issued operating limitations.

c. Inspection Requirements. Persons intending to operate a former military aircraft should be thoroughly familiar with the applicable inspection requirements for experimental exhibition aircraft in this AC because the inspection requirements differ with aircraft types. The owner/operator must establish an inspection program as prescribed in the operating limitations

issued to their aircraft. The owner/operator should record the type of selected inspection program in the aircraft maintenance records.

d. Inspection Program Guidelines. In the case where a manufacturer established different inspection program guidelines for civil operations of the aircraft, you may use those guidelines in lieu of the manufacturer's military guidelines.

e. Substituting Materials or Replacement Parts. Changes involving the substitution of materials or replacement parts should be in accordance with accepted FAA 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 as specified below:

(1) Type Certificate (TC) Products. Replacement of life-limited parts required by 14 CFR part 91, § 91.409(e) is only applicable to experimental exhibition aircraft when the required replacement times are specified in the U.S. aircraft specifications, or Type Certificate Data Sheets (TCDS).

(2) Non-Type Certificated (TC'd) Products. Unless otherwise determined by the FAA, all articles installed in non-TC'd products operated in the experimental exhibition 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-TC'd products is acceptable. Manufacturers have historically assigned life limits to articles installed in non-TC'd products. These products were typically operated in a military environment, which imposed different limitations based on the aircraft's operational and environmental use. Although these limitations are not regulatory by the FAA we have determined that these limits must be evaluated for their current operating environment and addressed in the accepted inspection program. All articles installed in non-TC'd products operated in the experimental exhibition category, 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 that the equivalent level of safety still renders the product in a serviceable condition for safe operation.

f. Request for Changes. Request for changes to the approved inspection program submitted by the owner/operator of a former military aircraft will require review and approval by the FAA. The owner/operator should ensure that when developing the change, they address concerns affecting continued airworthiness of the aircraft (§ 91.7).

g. Types of Aircraft. The FAA divides aircraft eligible for certification under experimental exhibition or air racing into groups established by aircraft categories to standardize operating limitations and inspection requirements. Aircraft must meet the description criteria to include it in a specific group.

5. INSPECTION PROGRAM CONTENT. Owners/operators of aircraft requiring an FAA-accepted inspection program in accordance with the appropriate operating limitations will use a program provided by the manufacturer, the applicable military service maintenance

requirements, or one specifically designed for the aircraft that includes the scope and detail of part 43 appendix D. Owners/operators of former military aircraft requiring yearly condition inspections in accordance with the appropriate operating limitations must submit a program developed to the scope and detail of part 43 appendix D (or other FAA-accepted program) and guidance contained within this AC prior to the initial certification inspection of the aircraft.

a. Safety Determinations. Owner/operators of aircraft requiring an FAA-approved inspection program in accordance with § 91.409(f)(4) allow owners/operators the flexibility to tailor programs to meet their specific needs, in some cases it is not always possible to comply with manufacturers requirements since some materials such as lubricants, fluids, and other standard parts become obsolete over time and may be unavailable. In these cases, the applicant may need to present the modified or industry equivalent versions (and justification for a change).

b. Aircraft Inspection Program Development. Aircraft inspection program development requires an intimate knowledge of the airplane and its components. A sound knowledge and understanding of inspection procedures, techniques, and inspection system control is also necessary. The inspection program should cover the entire aircraft, and the inspection frequencies should be based on sound judgment and previous service experience with similar aircraft models. Most owner/operators find that adapting an existing program to their needs is the most economical and practical.

c. Elements. It is recommended the inspection programs include the following elements:

- A cover page or header clearly indicating the approval/acceptance of the program.
- The aircraft type, aircraft serial number, registration number, and registered owners.
- A statement describing the basis for the program (manufacturer, owner-developed, industry/military standard).
- A table of contents page showing the order of the material contained within the program.
- A definitions section explaining any unique terms or abbreviations used.
- Any other information necessary or appropriate to describe the scope of the inspection program.
- A description of the inspection program including “what” to inspect, “when” to inspect it, “how” to perform the inspection, and “who” is responsible for inspecting, tracking component replacement times, and scheduling.
- A section describing the procedure for determining the effects of aging, corrosion control, and preservation.
- A section describing the method for determining aircraft total time, cycles, starts, or any other information (as appropriate) to show compliance to the CFRs. This should include an explanation of any formulas or other methods used to calculate time requirements in the absence of instrumentation or hard time data.
- A section on safety that identifies risk and mitigation strategies particular to the aircraft such as grounding, fire prevention, pyrotechnic explosion, radioactive components, ejection seat, or other hazards unique to the aircraft.
- A list of critical and life-limited components, when applicable, including current status, method of determining and tracking time or replacement frequency.

d. 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 Flight Standards District Office (FSDO) having jurisdiction over the area in which the aircraft will be based within 30 days, and:

(1) 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 the FAA Aircraft Registration Branch (AFS-750), and the aircraft owner does not need to provide copies to the gaining FSDO.

e. Existing Airworthiness Certificates and Operating Limitations. All previously issued airworthiness certificates and operating limitations will remain valid unless changes are requested by the applicant or reexamined by the FAA in accordance with 49 USC § 44709.

6. OWNER INVOLVEMENT. The FAA encourages the formation of type clubs, associations, and involvement of individuals with experience in particular areas of expertise to participate in information sharing and promotion of the product. Inspection programs developed by owner involvement groups may be acceptable to the FAA and used for similar make and model aircraft. The FAA encourages owners, type clubs, and associations to collect inspection and operating data of specific makes and models of former military aircraft to establish industry-wide safety baselines. Collected data can be invaluable when petitioning the FAA for modifications to existing operating limitations and/or aircraft inspection programs.

7. CERTIFICATION. The FAA has established procedures for original and recurrent airworthiness certification of aircraft and related products. The FAA has divided former military aircraft operating in experimental exhibition into groups to properly certificate this wide range of aircraft.

a. Initial Certification. Owner/operators applying for initial certification should be familiar with the current guidance to determine the correct exhibition group for the aircraft and the type of inspection program for the specific aircraft.

b. Parts and Service Evaluation. Owner/operators should evaluate parts and service availability during the certification of the aircraft and consider conversion of those components

not commonly used or found in the United States. Converting such items as tires, brakes, and pressure vessels to U.S. standards may provide better resources and lessen the likelihood of undesirable down time in search of a method of compliance.

8. STORAGE. Extended periods of inactivity can have a negative effect on the airworthiness of an aircraft and its components. Inspection programs should consider time limitations as well as environmental conditions with procedures for preservation of the article. When manufacturer's recommendations are not available, consult available industry standards for preservation of shelf-life materials, lubricants, seals, O-rings, and corrosion protection of metal parts.

9. HAZARDOUS MATERIALS (HAZMAT). Often former military aircraft are received with pyrotechnic devices or manufactured with components containing dangerous chemicals that may not be intended for use by a private owner/operator, but impose a potential health risk for persons exposed. Review and identify these materials. Private owners should not assume that those materials are safe or that they have received approval during a prior demilitarization process, as the final configuration of the aircraft is unknown at that time. If they are removed, provide a method for their disposal. Those intended for retention for the operation of the aircraft should include methods of complying with regulatory requirements such as pressure vessel testing, general maintenance, and containment of hazmat.

10. CORROSION CONTROL. All aircraft are prone to some degree of corrosion. Corrosion-prone areas are susceptible to finish damage, moisture entrapment, or both. The basic corrosion prevention philosophy is to make periodic inspections to ensure that the protective finishes remain intact and that all drain holes and pathways remain open. The current edition of AC 43-4, Corrosion Control for Aircraft may be used for additional guidance pertaining to corrosion control in aircraft.

11. PYROTECHNICS AND EXPLOSIVES. Some former military aircraft are produced with explosive devices for the operation of ejection seats, parachute deployment, or jettisonable stores. When retaining these devices, strictly adhere to the requirements. Proper maintenance must be clearly identified in the aircraft's inspection program.

NOTE: The FAA recommends the removal of explosive devices in ejection seats if the ejection seat will not be activated during ground and flight operations.

12. REQUIRED REPLACEMENT INTERVALS. Owners/operators of former military aircraft certificated in the experimental exhibition category must include in their inspections programs procedures to ensure the continuing airworthiness of their aircraft, including the method used to address the safety concerns associated with replacement time intervals and/or life limits, if applicable, established by the manufacturer or those mandated by the FAA. List all mandatory replacement intervals, clearly indicate their current status, method of compliance, and be recorded in accordance with §§ 91.409(e) and 91.417.

13. AIRCRAFT RECORDS. Section 91.417 provides recordkeeping requirements for civil aircraft operators. Owner/operators are encouraged to keep clear and concise aircraft

maintenance records. Aircraft records provide continuity of maintenance and inspections and are useful for planning the future (as well as show completion of past) maintenance, and inspections. Records allow the owner/operator to ensure the usage of proper data and procedures and identify the person performing the work.

14. CONVERSIONS TO ENGLISH. The FAA will verify that instruments, instrument markings, and placards are as required by the CFR and are identifiable in English. Additionally, the FAA will verify the conversion of all measurements to standard U.S. units of measure for those instruments necessary for operation in the U.S. air traffic system.

15. SECURITY. Owner/operators should familiarize themselves with directives from various government agencies. FAA regulations primarily have to do with aircraft operations, certification, and airworthiness standards pertaining to safe operation in U.S. airspace, while other agencies such as the Department of Defense (DOD), Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), and Department of Homeland Security (DHS) have jurisdiction over import requirements, illegal substances, protection, and other matters of national security. As circumstances dictate, constant vigilance to regulatory changes is the owner/operator's responsibility.

16. EXPERIMENTAL AIRCRAFT INSPECTION PROGRAM.

a. Aircraft Maintenance. The owner or operator of an aircraft has the responsibility for maintaining their aircraft in a condition for safe operation. The yearly inspection program is one of the primary tools for ensuring the aircraft is in a condition for safe operation.

b. Inspection Criteria. Inspection programs should encompass the scope and detail of part 43 appendix D using additional criteria based on guidance within this AC, from manufacturers, or country of origin's recommended maintenance and/or inspection guidelines. The guidance provided by the country of origin's recommended maintenance and/or inspection guidelines should be evaluated and may be modified to provide an equivalent level of safety, based upon the owner's or operator's environmental and operational use of the aircraft. This includes detailed information concerning required replacement intervals and life-limited parts, if applicable, and individual component overhaul requirements contained in the aircraft's operating limitations.

c. Contact Information. The inspection program does not need to contain the name and contact information of the individual responsible for overseeing the inspection program, as that information is contained within the program letter submitted for the aircraft.

d. Example Information. The information contained in Appendix 1 is an example program format; only use it in that context.

ORIGINAL SIGNED by
/s/ John M. Allen
Director, Flight Standards Service

APPENDIX 1. EXPERIMENTAL AIRCRAFT INSPECTION PROGRAM

1. GENERAL. This section provides a brief description of the aircraft, its history, and the documents used to develop this inspection program.

a. It will include the aircraft registration and serial numbers.

b. It will also contain the table of contents showing each section and component of the inspection program and the recommended interval for critical safety of flight inspections including but not limited to:

- Maintenance preflight,
- Engine run-up and systems check,
- Periodic inspection,
- Specified inspections,
- Post inspection run-up,
- Systems check, and
- Airworthiness limitations (AL).

c. This section will also include a list of acceptable/approved fuels, oils, and lubricants.

d. Finally, it will provide a method for tracking changes and updates to this inspection program.

2. AIRCRAFT SPECIFICATIONS. This section lists the aircraft's basic flight information (converted to English) to include, but not limited to:

- Max speeds;
- Wing span;
- Height;
- Length;
- Width;
- Flaps takeoff;
- Flaps landing;
- Empty weight;
- Max takeoff weight (MTOW);
- Max landing weight;
- Normal takeoff weight;
- Empty aircraft weight C/G range;
- C/G range;
- Takeoff run;
- Landing distance;
- maximum operating limit speed (V_{MO});
- Max load factor;
- Max range; and
- Type of engine; etc.

3. FUSELAGE AND HULL INSPECTION. This section lists the basic elements of inspecting the aircraft within this area to include, but not limited to:

- Fabric or skin,
- Systems and components,
- External mounted systems/components, and
- General overall condition; etc.

4. CABIN AND COCKPIT INSPECTION. This section lists the basic elements of inspecting the aircraft within this area to include, but not limited to:

- Loose equipment;
- Seat and safety belts;
- Ejection seats (if applicable);
- Windows and windshields;
- Instruments;
- Flight, engine, and fuel controls;
- Batteries; and
- General overall condition; etc.

5. ENGINE AND NACELLE INSPECTION. This section lists the basic elements of inspecting the aircraft within this area to include, but not limited to:

- Engine overhaul times;
- Engine condition;
- Struts, nuts, and safety wire;
- Engine mounts;
- Engine controls;
- Exhaust stacks;
- Accessories; and
- General overall condition; etc.

6. LANDING GEAR INSPECTION. This section lists the basic elements of inspecting the aircraft within this area to include, but not limited to:

- Shock absorbing devices;
- Linkages, trusses, and members;
- Retracting and locking mechanism;
- Hydraulic lines;
- Electrical systems;
- Wheel bearings;
- Tires;
- Brakes
- Floats and skis; and
- General overall condition; etc.

7. WING AND CENTER SECTION INSPECTION. This section lists the basic elements of inspecting the aircraft within this area to include, but not limited to:

- General overall condition of the area, and flaps, flight controls; and
- External stores; etc.

8. EMPENNAGE ASSEMBLY. This section lists the basic elements of inspecting the aircraft within this area to include, but not limited to:

- General overall condition of the area; and
- Rudder(s), stabilizer(s), etc.

9. PROPELLER INSPECTION. This section lists the basic elements of inspecting the aircraft within this area to include, but not limited to:

- Propeller assembly;
- Bolts;
- Anti-icing devices;
- Control mechanisms; and
- General overall condition of the area; etc.

10. RADIO AND RADAR INSPECTION. This section lists the basic elements of inspecting the aircraft within this area to include, but not limited to:

- Radio and electronic equipment,
- Wiring and conduits,
- Radioactive components,
- Bonding and shielding,
- Antenna mounting and security, and
- General overall condition of the area, etc.

11. MISCELLANEOUS ITEM INSPECTION. This section lists the basic elements of inspecting the aircraft for items not covered by other sections of the inspection program. This section could include:

- Aircraft/engine fire suppression components;
- Personal/crew/passenger safety equipment, including parachutes and egress equipment;
- Oxygen systems;
- Hazardous/explosive components; and
- Areas of inspections to ensure the continued flight safety of the aircraft after an emergency such as a hard landing; running off a runway; etc.

12. LOGBOOK ENTRY. This section outlines the required logbook entries. These entries are required upon completion of the inspection. The logbook entries are located in the aircraft operating limitations and could read as:

a. Completed inspection and the aircraft is determined to be in a condition for safe operation:

“I certify that this aircraft has been inspected on [insert date] in accordance with the scope and detail of part 43 appendix D (or if appropriate, the FAA-approved inspection program for this aircraft dated _____ for serial number _____), and found to be in a condition for safe operation.”

Aircraft Total Time: _____ Inspection Type: _____
Signature and A&P Certificate #: _____ Date: _____

b. Enter the following statement in the appropriate aircraft and/or engine logbook if the aircraft was inspected and found not safe for flight:

“I certify that this aircraft has been inspected on [insert date] in accordance with the scope and detail of part 43 appendix D (or if appropriate, the FAA-approved inspection program for this aircraft dated _____ for serial number _____), and found NOT TO BE IN A CONDITION FOR SAFE OPERATION.”

Aircraft Total Time: _____ Inspection Type: _____
Signature and A&P Certificate #: _____ Date: _____