



U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Recommended Inspection
Procedures for Former Military
Aircraft

Date: DRAFT

AC No: 43-209A

Initiated by: AFS-300

Change:

1. PURPOSE. This advisory circular (AC) provides recommendations 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). While this AC provides one way of addressing the inspection provisions found on the aircraft's operating limitations, it may not be the only way of addressing the requirements for continued airworthiness of aircraft operating in the experimental exhibition category. The intent of this AC is not to supersede existing inspection procedures acceptable to the Federal Aviation Administration (FAA).

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. AC 43-209 originally provided recommendations for an acceptable inspection program for the L-39 Albatross. Due to the popularity of former military aircraft operations in the United States, general guidance applicable to other aircraft types or classes operating in the experimental exhibition category is appropriate.

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 historic 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. However, if deemed necessary in the interest of safety, specific maintenance requirements may be incorporated into the operating limitations to address safety

issues. Inspection programs for aircraft operating in accordance with § 21.191 (d) and (e) will be in accordance with current FAA national policy, including part 43 appendix D; 14 CFR part 91, § 91.409(e), (f), (g), and (h), and the current edition of FAA Order 8130.2, Airworthiness Certification of Aircraft and Related Products.

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 groups. 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 guidelines intended for military use for that aircraft.

e. Substituting Materials or Replacement Parts. Changes involving the substitution of materials or replacement parts should be in accordance with accepted FAA procedures, a recognized industry standard, or based on dimensions and technical data provided by the manufacturer or information provided by an appropriate engineering evaluation.

f. Request for Changes. Request for changes to the approved inspection program submitted by the owner/operator of a former military aircraft require justification which the FAA aviation safety inspector (ASI) processing the request will review. The owner/operator should ensure that when developing the change, they address public and flight safety concerns (§ 91.7).

g. Groups of Aircraft. Order 8130.2 divides aircraft eligible for certification under experimental exhibition or air racing into six groups to establish standardized operating limitations and inspection requirements. Aircraft must meet the description criteria of the order to include it in that 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. With the wide scope of variables, the FAA has determined that it is more efficient to allow local offices the latitude to make safety determinations concerning the development of initial inspection programs for former military aircraft requiring an FAA-approved program since the information presented to the inspector may be different from aircraft to aircraft or operator to operator. The inspector makes these initial determinations in accordance with current national policy and common industry safety practices. The rule allows owners/operators the flexibility to tailor programs to meet their specific needs because it is not

always possible to comply with those 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 equivalent versions (and justification for a change) for FAA acceptance.

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, previous service experience with similar aircraft models, and be acceptable to the FAA. Most owner/operators find that adapting an existing program to their needs is the most economical and practical.

c. Elements. Inspection programs should 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 (manufacture, owner developed, industry 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 conditions 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. Transfer of Ownership. Upon transfer of ownership or a change to the aircraft’s base of operation, the owner/operator will review the existing inspection program for the aircraft to ensure that it complies with FAA and industry standards. If no changes are required, the owner/operator must submit the inspection program to the gaining Flight Standards District Office (FSDO) along with a cover letter that states that the owner/operator has reviewed the inspection program, there are no requirements for any changes, and that the program remains the current program for the aircraft. If there is a requirement for changes, submit the modified

inspection program to the gaining FSDO. At the same time, the owner/operator of the aircraft will submit a new program letter to the gaining FSDO noting the name and contact information of the person responsible for the program.

NOTE: To comply with a regulatory requirement to incorporate the current inspection program, an owner/operator need only properly adopt the inspection program that is current at the time the owner/operator selects and identifies it in the aircraft maintenance records (refer to § 91.409(f)). The inspection program remains current unless the FAA mandates revisions to it in the form of a rulemaking action. Refer to http://www.faa.gov/about/office_org/headquarters_offices/agc/pol_adjudication/agc200/interpretations/data/interps/2008/Aircraft%20Maintenance.pdf.

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 Order 8130.2 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 as prescribed in Order 8130.2 to properly certificate this wide range of aircraft.

a. Initial Certification. Owner/operators applying for initial certification should contact their geographically responsible Manufacturing Inspection District Office (MIDO) or delegated FSDO for determination of the exhibition group the aircraft will be assigned to and the type of inspection program for the specific aircraft (FSDO-accepted, or scope and detail use of part 43 appendix D).

b. Parts and Service Evaluation. The FAA strongly recommends owner/operators to 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 will provide better resources and lessen the likelihood of undesirable down time in search of a method of compliance.

c. High Pressure Cylinders. Each high pressure cylinder installed in a U.S.-registered aircraft must be a cylinder that is manufactured and approved under the requirements of Title 49 of the Code of Federal Regulations (49 CFR), or under a special permit issued by the Pipeline and Hazardous Materials Safety Administration (PHMSA), under 49 CFR part 107. In particular, this requirement applies to those high-pressure cylinders installed in ex-military aircraft certificated in the experimental category. There are no exceptions. More information on PHMSA is available at http://www.faa.gov/about/office_org/headquarters_offices/ash/ash_offices and www.phmsa.dot.gov.

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.

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 and proper maintenance must be clearly identified in the aircraft's inspection program. Unfamiliarity or failure to maintain these devices can endanger human life or cause catastrophic loss of the aircraft.

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. Owners/operators modifying manufacturer's inspection standards or standards established by the state (country) of design should recognize that such deviations could potentially lead to a catastrophic failure. The inspection program should 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 record-keeping 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. APPENDIX 1, EXPERIMENTAL AIRCRAFT INSPECTION PROGRAM.

a. Aircraft Maintenance. The owner or operator of an aircraft has the responsibility for maintaining their aircraft in an airworthy condition. 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. 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.

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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; and
- Who the registered owners are and their contact information.

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.

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;
- Max landing weight;
- Normal takeoff weight;
- Empty aircraft weight C/G range;
- C/G range;
- Takeoff run;
- Landing distance;
- V_{mo} ;

- Max load factor;
- Max range; and
- Type of engine; etc.

3. FUSELAGE AND HULL INSPECTION. This section lists the sequence 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 sequence 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 sequence 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 sequence 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 sequence 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 sequence 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 sequence 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 sequence 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 sequence 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 (and if appropriate, and 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 (and if appropriate, and 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: _____