

Department of the Interior Departmental Manual

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Chapter 2: Aircraft Equipment and Maintenance

Originating Office: National Business Center

351 DM 2

2.1 **Purpose.** This chapter prescribes minimum aircraft equipment and maintenance standards for all activities within the Department of the Interior (DOI). This applies to DOI fleet aircraft, commercial aviation operations, and employee-owned private aircraft operated on official business, cooperator aircraft and uncertificated ex-military aircraft, operated by DOI.

2.2 **Equipment.** Aircraft, engines, and equipment shall be operated and maintained within the limitations specified by the manufacturer. The following equipment is in addition to, or further defines, 14 CFR 91 and/or 121, 125, and 135 requirements for the flight to be conducted and the aircraft's certification equipment requirements.

A. **Fire Extinguishers.** The fire extinguisher(s) as required by 14 CFR 135 shall be a handheld bottle, with a minimum 2-B:C rating, and mounted accessible to the flight crew.

B. **VHF-AM Aeronautical Transceiver.** All point-to-point 14 CFR 135 aircraft shall have, as a minimum, the communications capability required by the Federal Aviation Administration (FAA) for operation as a 14 CFR 135 certificate holder.

(1) **Point-to-Point.** If the point-to-point flight is conducted by other than a 14 CFR 135 certificate holder (e.g., approved cooperator aircraft), communication capability shall, as a minimum, enable flight following.

(2) **Special Use.** Aircraft flying fire-related special use missions and all DOI-owned or operated aircraft shall have a minimum of one 760-channel VHF-AM aeronautical transceiver installed, operating in the 118.000 MHz to 136.975 MHz in 25 kHz channel increments and having a minimum of five watts carrier power output.

C. **Floats.** Single engine aircraft operated beyond power-off gliding distance to shore shall be float-equipped except where established traffic flow requires aircraft to operate beyond gliding distance to shore during takeoffs and landings. Multi-engine aircraft operated at a weight that will allow it to climb, with the critical engine inoperative, at least 50 feet per minute, at an altitude of 1,000 feet above the surface may be operated overwater without floats. DOI fleet land aircraft may be repositioned (ferried) with only flight crewmembers on board without the required floats.

D. Emergency Equipment for Overwater Flights. Required emergency equipment for overwater flight is specified in the *Aviation Life Support Equipment (ALSE) Handbook*, issued as a supplement to this chapter (www.nbc.gov/amd).

E. Emergency Locator Transmitter (ELT). Details are contained in the *ALSE Handbook*.

F. Seat Belts and Shoulder Harnesses. Details are contained in the *ALSE Handbook*.

G. Aircraft Time Recording for Maintenance. Aircraft and component maintenance time will accumulate as defined in 14 CFR Part 1, "Time in Service."

H. Tracking Antennas. All tracking antenna installations shall meet FAA requirements. Tracking antennas mounted on aircraft whose cruise speed is greater than 180 knots and/or lacking wing struts shall have an FAA-certificated Designated Engineering Representative (DER) approval. This approval will be accomplished to determine the location of mounting antennas and to establish flight profile in all aspects of flight including climb, cruise, high altitude, descent, and flights into instrument meteorological conditions. The antennas must also be visible to the flight crew either by direct vision or through mirrors or other devices mounted to provide an undistorted view of the antenna. A structural and vibration analysis must be accomplished to determine the levels of stress and vibration when the antennas are installed. This approval will not necessarily meet the requirements for a Supplemental Type Certificate (STC); however, it will establish an engineering background to ensure the installation is safe.

I. Propeller Arc Markings. Float-equipped fleet aircraft will have propeller arc warning stripes conspicuously marked on each float.

2.3 **Special Use**. The following are additional requirements for special use activities:

A. Aerial Capture, Eradication, and Tagging of Animals. Detailed procedures and special equipment requirements for animal gathering, capturing, eradication, and tagging are contained in the *Aerial Capture, Eradication, and Tagging of Animals (ACETA) Handbook*, issued as a supplement to this chapter. (www.nbc.gov/amd).

B. Firefighting Aircraft Markings. Interagency-approved firefighting aircraft shall have high visibility markings or a three-point strobe and pulsating landing light system.

C. Aerial Delivery. Airtanker, helitanker, smokejumper, air-to-ground aerial delivery aircraft, and equipment shall have appropriate Board approval

D. Intercom System. An intercom system capable of serving the pilot and observer compatible with required protection headgear shall be required.

E. Rappel or Short-Haul Attachment Devices. Attachment devices used for human external loads shall have NBC AMD approval.

F. Survival Kits. A survival kit is required in accordance with the *ALSE Handbook*.

G. First Aid Kits. A first aid kit is required in accordance with the *ALSE Handbook*. First aid kit contents as required by FAA operating specifications meet this requirement.

H. Smokejumper Restraint Benches. The use of the smokejumper restraint benches (Simulaseats) that are not certified in the aircraft is limited to smokejumper missions only, regardless of aircraft certification. Smokejumpers are required to wear their protective suits and helmets for takeoff and landing when seated on the benches during smokejumper retrieval operations. The benches will be removed and replaced with conventional (FAA-approved) passenger seats when a smokejumper aircraft is used to transport passengers.

2.4 Maintenance.

A. DOI Owned or Operated Aircraft and DOI Employee Privately Owned Aircraft Transporting Passengers on Government Business. The owner/operator of an aircraft has the primary responsibility for maintenance. Maintenance of DOI-owned aircraft is a shared responsibility between the NBC AMD and the operating office or bureau. Maintenance of privately owned aircraft piloted by authorized DOI employees on official business is the responsibility of the employee piloting the aircraft. The pilot is responsible for determining that the aircraft is in a condition for safe flight as stated in the Federal Aviation Regulations.

(1) Maintenance Program: Each DOI entity that operates aircraft shall be responsible for complying with a maintenance and inspection program to ensure that aircraft are kept in a continuous state of airworthiness. It shall consist of, but not be limited to, the following items:

(a) Inspection Programs. Aircraft inspection programs shall comply with 14 CFR Part 91, Subpart E.

(b) Weight and Balance. The current empty weight and center of gravity for all aircraft shall be calculated from values established by actual weighing of the aircraft every 36 calendar months. This does not apply to those aircraft which have an FAA-approved weight and balance control system or to single engine aircraft, except NBC AMD may require single engine aircraft to be weighed at periods of configuration changes and installation or removal of equipment which may change the aircraft's center of gravity.

(i) All weighing of aircraft shall be performed on scales that have been certified as accurate within the preceding 24 calendar months. The certifying agency may be any accredited weights and measures laboratory.

(ii) A list of equipment installed in the aircraft at the time of weighing must be compiled. The equipment list will include the name of each item installed. Items which may be easily removed or installed for aircraft configuration changes (seats, special mission equipment, etc.) shall also be listed including the name, weight, and arm of each item.

Each page of the equipment list must identify the specific aircraft by at least the serial number or registration number of the aircraft. Each page of the equipment list will be dated indicating the last date of weighing or computation. The weight and balance and equipment list must be revised each time new equipment is installed or old equipment is removed.

(c) Maintenance Manuals. All aircraft shall be maintained in accordance with the factory-approved maintenance manuals.

(d) Maintenance Records. Aircraft maintenance records shall be maintained in accordance with 14 CFR 43 and 91.

(e) Maintenance Personnel. Maintenance shall be performed only by those persons authorized in accordance with 14 CFR Part 43. A DOI pilot may perform preventive maintenance on any aircraft operated by that pilot. Such preventive maintenance shall not be contrary to any FAA- or NBC AMD-approved maintenance system. A representative list of preventive maintenance items may be found in 14 CFR 43, Appendix A(c). Only a person so authorized by 14 CFR Part 43 shall approve an aircraft for return to service and an entry has been made in the aircraft maintenance record.

(2) Flight Tests: Only appropriate crewmembers shall be transported during a flight test. Flight test results shall be recorded in the aircraft maintenance record. The aircraft shall not be operated until it has been approved for return to service in accordance with 14 CFR 43 and a functional flight check performed by a pilot certificated in accordance with 14 CFR 61 following:

(a) Major repairs; or

(b) Replacement of engine, power train, propeller, rotor system, retractable landing gear system or primary flight control, or adjustment of a primary flight control system.

(3) Overhaul and Replacement: All aircraft, aircraft engines, propellers, or appliances for which the manufacturer has recommended an overhaul or replacement time shall be overhauled or replaced in accordance with those recommendations or other FAA-approved overhaul intervals.

(4) Special Flight Permits: When an FAA Special Flight Permit is required, approval for its use must be obtained from the Chief, Division of Technical Services – Headquarters or the AMD Alaska Regional Director prior to flight of any DOI-owned or employee-operated aircraft that:

(a) Does not meet its type design due to mishap damage, or

(b) Exceeds expiration of maintenance inspection time, or

(c) Exceeds component replacement time.

(5) Minimum Equipment: Each aircraft shall meet its type design including equipment, placards and markings, and aircraft documents. All type design-required instruments and equipment installed in the aircraft shall be in operable condition. However, aircraft may be operated with inoperable equipment in accordance with 14 CFR Parts 91.213, 121, 125, or 135 as appropriate.

(6) Alteration of DOI Fleet Aircraft: Configuration control is a critical element of AMD's technical management and mishap prevention responsibilities for DOI owned (fleet) aircraft, as provided for in 112 DM 10. In its "continued oversight role" for aviation activities within DOI, it is imperative that AMD be involved whenever any alteration (Including proposed removal or original manufacturer's equipment (OEM) is considered for fleet aircraft. In its "customer service role," AMD works closely with responsible bureau managers to provide timely assessment of requested aircraft alterations in support of DOI missions. In balancing these two important roles, the following DOI fleet aircraft alteration policies apply:

(a) Bureau personnel are not authorized to alter any DOI fleet aircraft without approval of AMD.

(b) Proposed alterations to any DOI fleet aircraft shall be submitted to the AMD Alaska Regional Director – Anchorage or Chief, Division of Technical Services – Boise for approval prior to any such alteration taking place. Because the complexity of proposed alterations can vary widely, the time required to adequately assess the safety and compatibility of proposed alterations can also vary greatly. Regardless of the complexity of the proposed alteration, AMD will provide an assessment within 30 calendar days of the receipt of the request. Alteration requests of lesser complexity will be assessed in less time.

(c) Copies of all documentation, including an FAA Form 337, if appropriate, and the aircraft weight and balance shall be forwarded to AMD upon completion of the alteration.

(d) Any proposed removal of OEM equipment or aircraft alteration which might affect safety-of-flight or appreciably affect weight, balance, structural strength, performance, power plant operations, flight characteristics, or other qualities affecting airworthiness, aircraft value and/or that is not to be done according to accepted practices or cannot be done by elementary operations, shall:

(e) Be forwarded by the AMD representative identified in (b) above, to the AMD Associate Director for approval.

NOTE: Equipment which would be routinely removed or installed (e.g., skis, floats, external camera mounts, tracking antennas, etc.) requires only an initial approval.

B. DOI Employee (Privately) Owned and Operated Aircraft without Passengers, Aircrew Members, or Flight Crewmembers other than the Owner. The aircraft, including avionics, shall be fully maintained in accordance with 14 CFR 91, Subpart E.

C. Vendor Aircraft.

(1) Aircraft shall be maintained in accordance with applicable FARs and the vendor's operations specifications. Aircraft components, which have reached the published limitation specified by FAA or the manufacturer, shall be inspected, overhauled, and/or replaced as required by FAA or by the manufacturer's publication. Engines and/or major components having an established time between overhaul (TBO) or finite life shall be replaced in accordance with the manufacturer's recommendation or an approved extension.

(2) Maintenance performed on single engine airtankers operated in accordance with 14 CFR 137 shall be required to be inspected in accordance with the following:

- (a) A 100-hour inspection program, and
- (b) An annual inspection program, or
- (c) A progressive aircraft inspection program.

(3) Aircraft shall be maintained in accordance with all applicable mandatory manufacturers' bulletins as required by operations specifications or identified by NBC AMD and FAA Airworthiness Directives (ADs).

D. Uncertificated, Ex-Military Aircraft Operated by DOI.

(1) Uncertificated aircraft shall be maintained and inspected in accordance with an active military maintenance program for the specific make, model, and series of aircraft being operated.

(2) If an active military maintenance program for the specific make, model, and series is not available, an alternative program for a similar make, model, and series may be substituted when the NBC AMD Associate Director can determine equivalency. The requesting bureau/agency shall review the proposed substitute program and provide necessary information to support the proposal, to include considerations of the following issues:

- (a) Malfunctions and defect reporting system.
- (b) Service bulletin, technical bulletin development and issue.
- (c) Manual revision for flight, maintenance, and parts manual.
- (d) Safety of flight notices.
- (e) System for monitoring, updating TBO/finite times.

(3) Modifications to ex-military aircraft shall be approved by the NBC AMD Associate Director, before altering the aircraft. Data used for modifying aircraft shall conform to

the same standards required to modify certificated civil aircraft. Documentation of modifications shall conform to the original military maintenance record system with the addition of the use of FAA Form 337. The copy shall not be forwarded to the FAA.

E. DOI Use of Interagency Committee for Aviation Policy (ICAP) Inspection Planning Guides (IPGs). The NBC AMD Associate Director may approve Government-operated aircraft when it can be verified that the aircraft are being maintained under an NBC AMD-approved ICAP IPG standard. Refer to 351 DM 4 for further guidance.

2.5 **Aircraft Approval Documents.**

A. Aircraft Data Cards/Approval Letters.

(1) Aircraft operated by DOI, except those of the USFS fleet, shall be inspected by an NBC AMD-approved inspector and have a current aircraft data card detailing the authorized uses.

(2) Vendor aircraft, excluding those flying point-to-point or high reconnaissance missions, shall be approved by an NBC AMD approved/accepted inspector prior to use. See OPM "Special Use Activities and Revised Standards for Technical Oversight."

(3) Cooperator aircraft, other than those from agencies issued agency-wide approval by the NBC AMD Associate Director, shall have a current letter issued by the respective Regional Director (See 351 DM 4, "Cooperator Operations").

B. Approval Duration.

(1) All DOI aircraft and vendor special use aircraft data cards/approval letters shall be valid for not more than 18 calendar months.

(2) All other DOI aircraft approvals (i.e., for point-to-point only aircraft) shall be valid for not more than 39 months.

(3) NBC AMD will revoke approvals for aircraft failing to maintain required standards.