

**Forest Service Handbook
National Headquarters - Washington Office
Washington, DC**

**Forest Service Handbook 5709.16 – Aviation Management Handbook
Chapter 40 –Airworthiness: Aircraft Standards, in inspections, and Maintenance**

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Responsible Staff:

Explanation of changes: Following is an explanation of the changes throughout the directive by section.

40 - This amendment substantially revises the entire chapter to better align with the U.S. Forest Service mission.

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Forest Service aircraft airworthiness includes standards, inspections, and maintenance. Forest Service aviation personnel and users must make appropriate use of aircraft and related equipment. Appropriate use (within type design) is use that the aircraft and related equipment were anticipated to perform when specifications were developed. Any alternate use (outside of type design) that was not incorporated into the specification must be accounted for prior to employing the aircraft in that use.

40.1 – Authority

Additional information about authority and laws pertaining to Forest Service Aviation may be found in FSM 5701. The following Federal requirements concern aircraft maintenance and inspection for civil and public aircraft.

1. Title 14 of the U.S. Federal Regulations (14 CFR), Parts 1, 39, 43, 45, 65, 91, and 107. Part 1 contains general information and definitions for aeronautics and space. Part 39 provides a legal framework for the Federal Aviation Administration's system of airworthiness directives. Part 43 includes the maintenance, preventive maintenance, rebuilding, and alternation of aircraft. Part 45 specifies the requirements for marking products and articles. Part 65 encompasses the certifications and requirements for airmen other than crew members. Part 91 deals with the general operating and flight rules.
2. Title 41 of the U.S. Code of Federal Regulations, Chapter 101. This subpart sets forth introductory material concerning the Federal Property Management Regulations System: its content, types, publication, authority, applicability, numbering, deviation procedure, as well as agency consultation, implementation, and supplementation.
3. Title 41 of the U.S. Code of Federal Regulations, Chapter 102, Federal Management Regulation (FMR). This section includes updated regulatory policies originally found in the Federal Property Management Regulation (FPMR). However, it does not contain FPMR material that describes how to do business with the General Services Administration (GSA). "How to" materials on this and other subjects are available in customer service guides, handbooks, brochures, and Internet websites provided by GSA.

In addition, direction for aviation reviews and evaluations are derived from the Interagency Committee on Aviation Policy (ICAP). This committee established common aviation safety standards and guidelines that guide program evaluations for all Federal executive department agencies.

40.2 – Objective

Assure that appropriate standards are employed and adhered to for aircraft, equipment, and maintenance personnel utilized by the Forest Service, whether Working Capital Fund (WCF) Fleet, contracted, or cooperator provided.

40.3 – Policy

Employ comprehensive standards that ensure implementation of:

1. Personnel qualifications and training standards,
2. Aircraft and equipment standards and inspection processes, and
3. An approval process that emphasizes continuing review and evaluation of aircraft, equipment, and personnel used by the Forest Service.

For additional direction, refer to FSM 5703.

40.4 – Responsibility

Refer to FSM 5704.

40.41 – Washington Office, Branch Chief, Airworthiness

It is the responsibility of the Washington Office, Washington Office Branch Chief, Airworthiness, (Washington Office detached Unit, Boise, ID), to:

Provide national leadership for:

Agency Aircraft and Avionics Inspector qualifications and training standards;

Aircraft and equipment standards development for all aircraft operated by the Forest Service; and

Aviation maintenance programs.

1. Ensure that the modification, repair, and maintenance of Forest Service operated aircraft are completed in accordance with the applicable Parts of Title 14, Code of Federal Regulations, and that personnel comply with the policy requirements and the approved maintenance and inspection guides for the specific type of aircraft;
2. Conduct National oversight and continuing evaluation of the aviation program to accomplish National, Regional, Forest, and District level aviation objectives within the scope of the airworthiness program;
3. Coordinate with Forest Service Acquisition Management personnel for contract specification development, contract evaluation, and logistic support in the procurement of aircraft and services;
4. Coordinate with FAM Aviation operations personnel and the national fixed-wing and helicopter program specialists for the inspection and approval of contract and rental agreement aircraft and facilities;

5. Approve aircraft inspection and maintenance programs for each type of Forest Service WCF aircraft;
6. Establish and approve an inspection and maintenance program for former military, non-FAA certificated aircraft owned by the Forest Service;
7. Ensure Forest Service WCF Fleet aircraft are maintained in standard configuration. Oversight and financial management of WCF aircraft includes the responsibility to review aircraft rates, manage the replacement account, approve modifications and repairs, and so forth.
8. Approve extensions to inspection intervals;
9. Authorize Regional Maintenance Program Managers to apply to the FAA for Special Flight Permits in accordance with 14 CFR Part 21.197;
10. Approve Agency Special Flight Permits for agency non-certificated aircraft using criteria in 14 CFR Part 21.197 as guidance;
11. Tabulate and disseminate malfunction and deficiency reports for similar type aircraft;
12. Approve Minimum Equipment Lists (MEL) for each type of aircraft operated by the Forest Service;
13. Understand, implement, and maintain the responsible areas of the Forest Service Safety Management System within the scope of their duties.

40.42 – Aviation Safety Inspector, Airworthiness, or a Regional Aviation Maintenance Program Manager

Refer to section 41.1 for direction on qualifications. It is the responsibility of the Aviation Safety Inspector, Airworthiness, or a Regional Aviation Maintenance Program Manager to:

1. Provide leadership for the:
 - a. Inspection, maintenance, and repair of Forest Service WCF Fleet aircraft assigned to their region and ensure assigned Forest Service aircraft are maintained in the standard configuration as determined by the Branch Chief, Airworthiness;
 - b. Has the authority to remove an aircraft from service if there is any non-compliance with policy, regulations, or threat to the safety of the aircraft, persons, or property;
 - c. Inspection and approval of contracted aircraft; and
 - d. Inspection and the recommendation for the approval of cooperator aircraft;

2. Provide oversight and continuing evaluation of the aviation program to accomplish National, Regional, Forest, and District level aviation objectives within the scope of the airworthiness program.
3. Monitor regional Aviation Safety Communiqués (SAFECOMs):
 - a. Comment as appropriate.
 - b. Communicate significant issues regionally and/or nationally.
4. Establish and maintain a current aviation technical library specific to the types of WCF aircraft assigned to the Region.
5. Delegate inspection authority. Inspectors may delegate their inspection authority to properly qualified personnel for the inspection of contract aircraft operated by the Forest Service as provided in section 41.3.
6. Understand, implement, and maintain the responsible areas of the Forest Service Safety Management System within the scope of their duties.

40.43 – WCF Fleet Aviation Maintenance Technician

Refer to section 41.12 for direction on qualifications. When dictated by Regional needs, each Region operating Forest Service WCF aircraft may have a qualified WCF Fleet Aviation Maintenance Technician responsible for:

1. The inspection, maintenance, and repair of the Forest Service WCF Fleet aircraft assigned to their Region and to ensure assigned Forest Service aircraft are maintained in the standard configuration as determined by the Branch Chief, Airworthiness;
2. Maintain a current aviation technical library specific to the assigned WCF aircraft;
3. Understand, implement, and maintain the responsible areas of the FS Safety Management System within the scope of their duties.

40.44 – Aviation Safety Inspectors, Avionics

Refer to section 41.2 for direction on qualifications. Each Forest Service Region that operates aircraft must have access to a qualified avionics inspector. It is the responsibility of Aviation Safety Inspectors, Avionics to:

1. Ensure that standards are established for avionics equipment and systems, and provide leadership regarding avionics standards for equipment and systems for Forest Service, cooperator, or contracted aircraft in support of the National and Regional Aviation Programs;
2. Provide inspection, oversight, and continuing evaluation of the aviation program to accomplish National, Regional, Forest, and District level aviation objectives;

3. Conduct pre-use inspections of contract aircraft avionics at the direction of the Aviation Safety Inspectors, Airworthiness.
 - a. Ensure aircraft avionics maintenance is being performed in compliance with the contract specifications and the operator's FAA-approved avionics maintenance program;
 - b. Document that the aircraft avionics are within the required maintenance and flight checks;
 - c. Ensure that the aircraft avionics comply with the applicable FAA Airworthiness Directives, Mandatory Service Bulletins, and Military Technical Orders, as applicable;
4. Ensure assigned Forest Service aircraft meet the National standard avionics configuration, unless otherwise approved by the Branch Chief, Airworthiness;
5. Establish and maintain a current aviation library meeting the needs of fleet, interagency, and incident avionics;
6. Delegate inspection authority. Avionics Inspectors may delegate their inspection authority to properly qualified personnel for the inspection of contract aircraft operated by the Forest Service as provided in section 41.3;
7. Understand, implement, and maintain the responsible areas of the Forest Service Safety Management System within the scope of their duties.

40.45 – Aeronautical/Aerospace Engineer

The Aeronautical/Aerospace Engineer is responsible to the Branch Chief, Airworthiness.

It is the responsibility of the Aeronautical/ Aerospace Engineer to:

1. Provide oversight of Forest Service-owned Type Certificate Data Sheets (TCDS) and Supplemental Type Certificates (STC) and the Forest Service Operational Loads Monitoring (OLM) Program;
2. Assist in the evaluation of solicitations, proposed new equipment, and aircraft repairs and modifications;
3. Interface with engineering representatives from the FAA, and aircraft and equipment manufacturers; and
4. Understand, implement, and maintain the responsible areas of the FS Safety Management System within the scope of their duties.

40.46 – Airworthiness Management Specialist/Analyst

The Airworthiness Management Specialist/Analyst is responsible to the Branch Chief, Airworthiness. The Airworthiness Analyst is responsible for analyzing and evaluating aviation cost and use data to ensure the financial solvency of the Forest Service fleet which assures that airworthiness requirements are properly funded and attainable. It is the responsibility of the Airworthiness Analyst to:

1. Interface with Washington Office and Regional representatives in relation to aviation business cases; managing projects; financial analysis and assessment of compliance with laws and regulations;
2. Completes the Federal Aviation Information Reporting Systems (FAIRS) reporting and working capital fund analysis and reports;
3. Assist in the formulation, evaluation of solicitations for proposed new or existing applications, and management of those projects;
4. Provide oversight of Airworthiness Branch databases including the Forest Service Operational Loads Monitoring (OLM) database and the aircraft carding database, AvCheck;
5. Understand, implement, and maintain the responsible areas of the FS Safety Management System within the scope of their duties.

40.5 – Definitions

Refer to FSM 5705.

40.6 – References

Refer to FSM 5706.

40.7 – Quality Assurance

Aviation Managers at all organizational levels must employ a comprehensive quality assurance process that includes:

1. Airworthiness personnel qualifications and training standards;
2. Aircraft and equipment standards and inspection processes;
3. An audit/review process that emphasizes evaluation and improvement of aircraft, equipment, and personnel used by the Forest Service.

Refer to FSM 5717 and the Aircraft Inspection Guide regarding Reviews, Evaluations, and Quality Assurance.

41 – Airworthiness Personnel Qualifications and Designations

41.1 – Aircraft Inspector Qualifications

Aircraft inspectors must possess a current airframe and powerplant certificate (A&P) issued by the Federal Aviation Administration (FAA). Additionally, Inspectors must hold and maintain an Inspection Authorization (IA) issued by the FAA (40.42).

41.11 – Aircraft Inspector Designations

The Branch Chief, Airworthiness, or the Regional Aviation Officer must designate, in writing, authorized aircraft inspectors that meet the minimum standards of this chapter. These inspectors are listed on the Forest Service Authorized National Pilot, Aircraft, and Avionics Inspectors List. Aircraft inspectors may have the following designations:

MA	Maintenance Airplane
MA1	Airtanker Initial Approval
MA2	Smokeyjumper Aircraft Initial Approval
MA3	Specially Equipped Light Fixed-Wing Initial
MA4	Return To Contract Availability Approval
MAA	IS-BAO Accredited Auditor, Fixed Wing
MH	Maintenance Helicopter
MH1	Type I Helicopter Initial Approval
MH2	Type II Helicopter Initial Approval
MH3	Type III & IV Helicopter Initial Approval
MH4	Return To Contract Availability Approval
MHA	IS-BAO Accredited Auditor, Helicopter
MU	Maintenance Unmanned Aircraft Systems (UAS)
MU1	UAS Initial Approval
MU4	Return To Contract Availability Approval

41.12 – Aircraft Maintenance Technician Qualifications

Only personnel meeting the qualifications of 14 CFR 43.7 and 65.83 with appropriate ratings (Airframe and/or Powerplant) must inspect, maintain, repair, or alter Forest Service WCF aircraft. Ensure that all maintenance personnel have the competencies appropriate to the levels of maintenance performed and the frequency with which the maintenance is performed. Initial and recurrent training for these competencies must be documented in the individual's training file.

41.2 – Avionics Inspector Qualifications

1. Avionics inspectors must maintain qualifications, hold a current and valid Federal Communications Commission (FCC) certification General Radiotelephone Operator License (GROL), and avionics proficiency.
2. Avionics inspectors must have the knowledge and experience of each avionics system being inspected.
3. Avionics inspectors must have access to, and use, the appropriate calibrated test equipment to verify the integrity of the avionics systems requiring approval. The inspector must be thoroughly knowledgeable in the use of all avionics test equipment used during inspections. Basic test equipment includes: dual impedance headset, AUX-FM adapter, portable radio, communications service monitor, and other test equipment that may be required to satisfactorily inspect required avionics systems.

41.21 – Avionics Inspector Designations

1. Approval. The Branch Chief, Airworthiness, or Regional Aviation Officers may approve Forest Service employees as avionics inspectors. These inspectors are listed on the Forest Service Authorized National Pilot, Aircraft, and Avionics Inspectors List found at: <http://fsweb.wo.fs.fed.us/fire/fam/aviation/>.
2. Avionics Inspector Designations. Only those personnel with the appropriate avionics endorsement may inspect avionics in aircraft.

AV1 Designation: An AV1 designation is required to perform conformity checks and approve avionics on point-to-point aircraft and reconnaissance aircraft without an installed FM transceiver. Designation requires any of the following: Airframe and Powerplant license, AV2 Designation, or AV3 Designation.

AV2 Designation: An AV2 designation is required to perform functional testing and provide follow-on approval of avionics on reconnaissance airplanes with an installed FM transceiver, Type IV air tactical airplanes, and rotorcraft not approved for passengers. An AV2 designation does not permit the initial approval of avionics during any contract or agreement period. Designation requires: the appropriate equipment, avionics training and pass or fail ability for the avionics systems being inspected; or an AV3 Designation.

AV3 Designation: An AV3 designation is required to conduct performance testing, approve avionics on all aircraft not listed under AV1 or AV2, and provide initial approval of avionics for aircraft listed under AV2. Examples of aircraft which require AV3 for avionics approval are leadplanes, airtankers/helitankers, scoopers, smokejumpers, helicopters approved for passengers, and Type I, II, and III air tactical aircraft. Designation requires: the appropriate test equipment, advanced training in avionics systems, and either an FCC General Radiotelephone Operator License or an appropriately rated repair station license.

AV4 Designation: Personnel with an AV4 designation are authorized to return aircraft to contract availability for avionics issues.

41.22 – Forest Service Approved Avionics Inspectors Employed by Other Agencies

1. Qualifications. The Branch Chief, Airworthiness may authorize Avionics Inspectors employed by other agencies or cooperators, provided their avionics inspector standards are commensurate with those required by Forest Service Avionics Inspectors.
2. Designations. The Branch Chief, Airworthiness may grant approval or disapproval for each individual, specifying each person's avionics designation and document the approval in writing.
3. Revocation. Avionics Inspector approval may be revoked by the Branch Chief, Airworthiness, or an authorized designee, such as the Regional Aviation Officer.

41.3 – Delegation of Inspection Authority

Aircraft and Avionics Inspectors may delegate their Forest Service inspection authority to properly qualified personnel as long as they meet the minimum experience and training requirements found in 41.1 and 41.2, and are designated by the Regional Aviation Officer or the Washington Office Branch Chief, Airworthiness.

41.4 – Maintenance and Avionics Personnel Training

1. Within the first year after hire, all Aircraft Maintenance and Avionics Inspectors are required to attend FAA Academy courses (online and classroom training). In the event the FAA is not offering the courses in the required timeframe, or under certain circumstances, this may be extended until the course(s) are offered or equivalent training is accomplished. The current courses and prerequisites are listed in the inspector task books.
2. Aircraft and Avionics Inspectors hired after January 1, 2013 must complete the current Task Book for those positions prior to being added to the Forest Service Authorized National Pilot, Aircraft, and Avionics Inspectors List.
3. Each aircraft inspector and Avionics Inspector must receive a minimum of 24 hours of technical training annually or 48 hours bi-annually.

4. Each Inspector is required to attend the Forest Service or Interagency Inspectors workshop annually. With prior coordination with the Branch Chief, Airworthiness, an alternate means of compliance (AMOC) for inspector workshop attendance can be formulated and accomplished. This AMOC may not be used for two consecutive years.

42 – Aircraft and Equipment Standards

The Forest Service primarily relies on Federal Aviation Administration (FAA) maintenance, inspection, and certification standards for all basic aircraft, additional equipment, and alterations. These are minimum standards. Based on the needs of the Forest Service, higher or more robust standards can be imposed to assure the airworthiness of aircraft the Forest Service operates. This may be in the form of a later FAA certification requirement that is above and beyond what was needed for initial FAA certification of an aircraft, additional equipment, or an alteration because of special use mission needs or additional risk mitigation.

These standards will be incorporated and implemented through policy documents for fleet aircraft and put into practice through contract specification for contract aircraft. Collaborative efforts with interagency partners have produced cooperator standards that are required for cooperator aircraft that are used by the Forest Service. Because portions of the Forest Service-owned fleet and cooperator aircraft are former military aircraft, which are not FAA certificated, an equivalent standard for those aircraft must be acceptable.

42.1 – Aircraft Maintenance Standards

Maintain all Forest Service WCF, leased, and contracted aircraft in accordance with FMR 102.33 and applicable 14 CFR requirements. Regions with WCF aircraft assigned must establish and maintain maintenance procedures in a Regional Maintenance Procedures Guide (MPG) as specified in the FS Aircraft Inspector Guide (AIG). The Regional MPG must contain detailed and documented procedures to ensure the following standards are met. Aircraft maintenance programs must, as a minimum, include the following requirements:

1. Implement the Forest Service approved inspection program to ensure each type of aircraft are maintained in an airworthy condition and are completed within the approved intervals.
2. Include documented procedures that ensure all required inspections and maintenance are performed with the required frequency and level of quality that are auditable. This includes a Required Inspection Item (RII) List approved by the AWB Branch Chief for each make and model of WCF aircraft incorporated in the Regional MPG (48.23).
3. Maintain the FS approved system that documents the status of life-limited parts and overhaul time requirements for airframes, aircraft engines, propellers, and rotors (48.22).
4. Ensure aircraft conform to the appropriate Type Design and are maintained in a properly altered condition. This includes the standardized configurations of accessories, equipment, and paint schemes for like make/model approved by the Branch Chief, Airworthiness.

5. Do not approve the use of any aircraft unless it is in compliance with the standards for replacement times of life-limited parts and overhaul frequencies.
6. Comply with all applicable Federal Aviation Administration (FAA) Airworthiness Directives (ADs), 14 CFR 91.417 (a) (2) (v), and Service Bulletins (SBs) with a time compliance requirement, referenced in an FAA Special Airworthiness Information Bulletin (SAIB), or are designated mandatory by the manufacturer.
7. Accomplish functions assigned in the FS Internal Evaluation Program (IEP) that is part of the Forest Service Safety Management System.

42.11 – Aircraft Return to Use after Maintenance

1. Working Capital Fund (WCF) Aircraft. An authorized aircraft inspector must approve all WCF aircraft with mechanical or equipment deficiencies prior to returning them to service.
2. Contracted Aircraft.
 - a. Contractor authorized aircraft maintenance personnel must approve for “return to service” for all contracted or leased aircraft with mechanical or equipment deficiencies.
 - b. A Forest Service approved aviation inspector must approve the aircraft for “Return to Contract Availability.”

Depending on the complexity of the maintenance or repair, “Return to Contract Availability” approval may be given verbally with an electronic follow-up.

3. Foreign Government Aircraft.
 - a. Aircraft owned or operated by a foreign government that are approved for use by the Forest Service must follow the same return to availability process as contracted aircraft of the same type or mission.
 - b. Aircraft maintenance personnel must approve for “return to service” for these aircraft with mechanical or equipment deficiencies.
 - c. A Forest Service approved aviation inspector must approve the aircraft for “Return to Availability.”
 - d. Depending on the complexity of the maintenance or repair, “Return to Availability” approval may be given verbally with an electronic follow-up.
4. Department of Defense Aircraft. The Forest Service does not approve or return to availability DOD aircraft.

42.12 – Maintenance, Operational, and Functional Check Flights

1. Working Capital Fund (WCF) Fleet Aircraft. Do not approve Forest Service-WCF aircraft for return to service until a maintenance flight check has been performed following any repair or alteration that has appreciably changed the aircraft flight characteristics or operating limitations. Refer to 14 CFR, part 91.407 for related direction.
2. Contracted Aircraft. Do not approve Forest Service contracted aircraft for return to contract availability until a maintenance flight check has been performed following any repair or alteration that has appreciably changed the aircraft flight characteristics or operating limitations and has been approved for return to service (signed off) by contractor maintenance personnel (FSM 5714).
3. The following are applicable to all Forest Service WCF Fleet and contracted aircraft:

An operational check flight must be conducted by a pilot qualified in the type of aircraft with only those persons on board essential to the evaluation.

The Pilot performing the check flight must make the appropriate entries in the aircraft records (form FS-5700E, Aircraft Maintenance Log, for Forest Service fleet or leased aircraft) describing the reason for the check flight and the results of the operational check.

The pilot must coordinate with maintenance personnel prior to the operational check flight to discuss the maintenance performed and the aircraft systems required to be checked.

Operational check flights must be performed in daylight visual flight rules (VFR) conditions. The aircraft must return to the departure airfield where the pilot must review the check flight results with maintenance personnel. Maintenance personnel must make a final check of the work performed before releasing the aircraft.

The entire process must be documented in writing in a log entry that meets the requirements of 14 CFR, Part 43.

Fixed-Wing Aircraft. Check flights must be conducted (but are not limited to those situations) when the following maintenance activities have occurred on fixed-wing aircraft:

1. Engine removal and installation.
2. Propeller removal and installation.
3. Any maintenance or alteration that appreciably changes the flight characteristics or operation of the aircraft.

Helicopters. Check flights must be conducted (but are not limited to these situations) when the following maintenance activities have occurred on helicopters:

1. Engine removal and installation.
2. Rotor removal and installation.
3. Any maintenance or alteration that appreciably changes the flight characteristics or operation of the aircraft.

42.13 – Engine Installation and Run-In

Piston engine installations that are new, rebuilt, or overhauled must accumulate 3 hours of operating time, which includes 2 hours of flight time, prior to Forest Service use.

42.2 – Standards, Inspections, and Approvals for Forest Service Contracted Aircraft

42.21 – General Aircraft and Equipment Standards

The standards below do not apply to small UAS (sUAS), which must meet FAA Part 107 airworthiness requirements and be approved by the Branch Chief, Airworthiness or their designee.

1. Aircraft furnished to the Forest Service under a contract or rental agreement must possess a standard category airworthiness certificate for flights carrying agency personnel.
 - a. Helicopters powered with reciprocating engines must not be approved.
 - b. Helicopters carrying passengers must be equipped with FAA approved wire strike protection systems.
 - c. Helicopters carrying passengers must be equipped with engine inlet air filtration system/particle air separator.
 - d. Contract Type 1 helicopters may be approved for the transportation of agency personnel, including helicopter managers. If not approved, this restriction does not apply to:
 - (1) Forest Service Helicopter Inspector Pilots only in the performance of their pilot evaluation or carding duties.
 - (2) Military (National Guard or Active Duty) Type 1/ heavy helicopters used to transport firefighters during fire incidents or in support of FS Law Enforcement and Investigations (LEI) operations.
 - (3) DHS, DOJ Type 1/ heavy helicopters used to transport FS Law Enforcement and Investigations (LEI) operations.

2. Aircraft used for passenger carrying operations must be on a 14 CFR Part 135 certificate and be equipped in accordance with the applicable 14 CFR Part 135 requirements.
3. Military Surplus Restricted Category helicopters must not be approved to carry agency personnel.
4. Aircraft must not be operated with inoperative equipment, unless it has an approved minimum equipment list, as required by 14 CFR, Part 91.213, Inoperative Instruments and Equipment, or unless otherwise approved by the Branch Chief, Airworthiness.
5. Aircraft upholstery, paint, and Plexiglas must be in good condition.
6. Aircraft must not be approved if any engine, component, or propeller time in service exceeds the manufacturer's recommended time between overhaul, unless approved under an FAA time extension in hours or calendar months.
7. New, rebuilt, or overhauled piston engines in fixed-wing aircraft must accumulate 3 hours of operating time, including 2 continuous hours in flight, prior to Forest Service use.
8. An FAA approved shoulder harness is required for each front seat occupant.
9. A flight meter or recording tachometer displaying actual flight time in hours and tenths is required.
10. A first aid kit is required.
11. Dual controls, if essential for initial pilot performance evaluation are required.
12. Aircraft must be reweighed on the following schedule:
 - a. Single engine airplanes (12,500 or less) must be reweighed every 5 years.
 - b. All other aircraft must be reweighed every 36 months.
13. Light fixed-wing aircraft procured by the Forest Service must meet the minimum requirements in the Light Fixed-Wing Solicitation Master Specification (Light FW Master Spec.).
14. Helicopters procured by the Forest Service must meet the minimum requirements in the Helicopter Solicitation Master Specification (Helicopter Master Spec.). Aircraft approved for interagency fire must meet Interagency Helicopter Fire Standards.

42.22 – General Avionics Standards

The standards below do not apply to sUAS, which must meet FAA Part 107 airworthiness requirements and be approved by the Branch Chief, Airworthiness or their designee.

1. As a minimum, aircraft must be equipped with the following functioning avionics equipment for day visual flight rules (VFR) operations:
 - a. One 760-channel VHF-AM transceiver for fixed-wing and helicopter operations.
 - b. Two 760-channel VHF-AM transceiver for fixed-wing fire operations.
 - c. An Automated Flight Following (AFF) System.
 - d. One VHF-FM transceiver for fire operations.
2. Single engine turbine and multi-engine fixed-wing aircraft must meet 14 CFR Part 135 requirements for night and instrument flight rules (IFR) for passenger flights, prior to dispatch or use for that type of mission.
3. Avionics must be installed so as not to interfere with passenger space, comfort, or safety, yet be easily accessible for servicing.

42.3 – Special Use Mission Aircraft Modifications

The Forest Service requires modifications to owned and contracted aircraft to appropriately perform agency special use missions. The aircraft's performance in these mission requires a defined deliverable in accordance with established agency and interagency standards.

Additionally these modifications have to comply with both Forest Service and FAA airworthiness standards while delivering the needed product or service to the Forest Service Fire organization. The Airworthiness Branch will partner with representatives from the National Technology and Development Program (NTDP) in the development and agency approval of equipment and systems in their respective special use missions, for example, Smokejumper, Rappel, and Large Airtankers (retardant delivery systems).

43 – Contract Aircraft Inspection and Approval Management

The Regional Aviation Officer or the Branch Chief, Airworthiness, or their designated inspectors of aircraft must approve all contract and rental agreement aircraft used to fly Forest Service missions. Aircraft must be inspected and approved in accordance with the guidelines and procedures established in this policy handbook, the Forest Service Aircraft Inspection Guide, and the contract standard. Aircraft approval is documented by an Airplane, Helicopter, Airtanker, or UAS Data Card.

Fixed-wing aircraft under contract that are used for passenger and/or cargo transportation must be certified and operated under 14 CFR, Parts 119, 121, 125, or 135, as applicable.

Helicopters under contract that are used for passenger and/or external/internal cargo transportation must be certified and operated under 14 CFR, Parts 133, 135, and/or 137, as applicable.

43.1 – Point-to-Point Aircraft Approvals

Contract aircraft flying only point-to-point missions under the applicable provisions of 14 CFR Parts 119, and 135, as applicable with passengers and/or cargo may be issued designations without inspection, provided they meet the requirements, policies, and direction found in FSM 5703 and in the Guides listed in FSM 5706. Point-to-point designations are identified on the Point-to-Point Airplane Data Cards. Point-to-Point Airplane Data Cards may be approved for up to 2-calendar years.

1. The contractor is responsible for providing aircraft meeting the requirements of the procurement document.
2. Forest Service aircraft inspectors are responsible for reviewing the contractor's aircraft documentation to ensure, through verification with the FAA if required, that the aircraft fully comply with the requirements of the contract. Forest Service verification of the contractor's compliance with FAA requirements of the contract must not be considered an airworthiness inspection.
3. Aircraft approval must be documented by the following required information:

Aircraft type and registration number.

Point-to-point mission approvals; Visual Flight Rules Day, Night, Instrument Flight Rules, and so forth. A copy of the documentation must be available in each aircraft for passenger review on demand.

Noncompliance with provisions of the Forest Service contracts/rental agreements and procedures or the terms of the procurement document must be reported to the procurement official and the FAA, as appropriate.

43.11 – Commercial Air Carriers

For official travel on flights with scheduled airlines (14 CFR 121) or scheduled commuter airlines (14 CFR 135.2), aircraft approval requirements (carded or approved by letter) are not required.

43.12 – Forest Service Contracted Airtankers

1. Airtankers contracted by the Forest Service must have a Standard or Restricted Airworthiness Certificate for the aircraft issued by the Federal Aviation Administration (FAA).

2. Each aircraft and/or tank installation must have a TC and/or STC issued for the specific aircraft make and model and tank retardant system.
3. Airtankers must conform to the applicable version of the Forest Service Airworthiness Assurance Guide.
4. Aircraft used in airtanker operations must meet the retardant delivery system performance criteria established by the Aerial Delivery System Subcommittee (ADSS).
5. Any modification or alteration which may affect aircraft performance, flight characteristics, operational limitations, or retardant delivery performance must be recommended by the ADSS and approved by the Forest Service.

43.2 – Special Use Mission Flights

Agency inspections and approvals are required each calendar year for aircraft approved to perform special use mission flights. For definition, refer to FSM 5705.

43.3 – Authorized Aircraft Inspectors

Only those persons recommended by the Regional Aviation Officers and approved by the Branch Chief, Airworthiness must inspect and approve contract aircraft. These inspector designations, along with their names, agency, regions, locations, and authorizations appear on the Forest Service Authorized National Pilot, Aircraft, and Avionics Inspectors List maintained by the Forest Service.

Cooperator aircraft inspectors may be included on the Forest Service Authorized National Pilot, Aircraft, and Avionics Inspectors List, when recommended by the Regional Aviation Officer and approved by the Branch Chief, Airworthiness. This need will be determined by the Regional Aviation Officer and the Branch Chief, Airworthiness. The inspectors must meet all Forest Service inspector qualifications, training, and recurrent requirements.

Forest Service regions may use aircraft approved by the DOI for specific Forest Service special use mission flights without re-inspection.

44 – Contract Airplane Data and Approval Records

Aircraft inspectors must complete form FS-5700-21, Airplane Data Record, FS-5700-21a, Helicopter Data Record, or form FS-5700-21b, Unmanned Aircraft Systems Data Record for each aircraft inspected, except airtankers. Airtankers must be approved using form FS 5700-30 (44.5). This may be done in hard copy or electronically. Maintain forms for appropriate retention period per FSH 6209.11.

44.1 – Aircraft Pre-Use Inspection Discrepancy Report

Forest Service aircraft inspectors must complete the applicable information on form FS-5700-33 (44.4), Aircraft Pre-Use Inspection Discrepancy Report, including:

1. Report discrepancies, including references to the contract.
2. Sign and date the completed inspection.
3. Forward a copy to the appropriate contracting officer and ensure the operator receives a copy of the report.
4. Instruct the operator to return a copy to the inspector when (if applicable) all discrepancies are corrected.

44.2 – Aircraft Approval Cards

Provided the aircraft is free of discrepancies at the time of approval, the aircraft inspector may complete form FS-5700-21, Airplane Data Record, FS-5700-21a, Helicopter Data Record, or form FS-5700-21b, Unmanned Aircraft Systems Data Record and issue a card to the contractor, which must be kept with the aircraft. A copy of the data record must be retained by the aircraft inspector and a copy sent to the contracting officer or their representative. Refer to 44.5 for airtanker approvals.

44.3 – Aircraft Contract Status Report

Complete form FS-5700-32, Aircraft Contract Status Report, and document the status of approval, corrective actions not needing re-inspection, and re-inspection requirements.

44.4 – Aircraft Inspection Forms Management

1. Forest Service aircraft inspectors have the responsibility to ensure all applicable aircraft inspection forms, status reports, and approval cards are complete, and the contractor has been briefed as to the status of each aircraft.
2. Inspectors must ensure the contractor has received the appropriate copies of each inspection form and status report. When discrepancies have been identified, the Inspectors must ensure that the contractor is fully briefed on the nature of the discrepancies and on what corrective action is necessary before issuing form FS-5700-21, Airplane Data Record; or form FS-5700-21a, Helicopter Data Record; or form FS-5700-4, Aircraft Approval Card, for airtankers; or form FS-5700-21b, Unmanned Aircraft Systems Data Record for UAS.
3. Aircraft inspectors must maintain copies of the inspection documentation for each aircraft. The Forest Service Contracting Officer receives the complete file.

44.5 – Airtanker Inspection Form

Document airtanker inspections by completing form FS-5700-30, Airtanker Inspection Form, or revised 5700-21 series form. Ensure all entries recorded are accurate and include the operator's name, contract number, item number, and designated operator's base.

1. Review the aircraft log books and maintenance records for current time/life status of all components (including structural components) and the inspection status (including airframe structural inspections).
2. Record the engine serial numbers and the time since overhaul or new installation for each engine attached and for each propeller.
3. Identify the assigned flightcrew, including the flight engineer and a mechanic, when applicable.
4. Complete the remarks section; indicate the number of discrepancies identified on the inspection form, Aircraft Pre-Use Inspection Discrepancy Report; sign; and date the form at the time of pre-use inspection.

44.51 – Airtanker Approval Card

Provided the airtanker is free of discrepancies at the time of approval, the aircraft inspector may complete form FS-5700-4, Aircraft Approval Card, and issue a card to the contractor which must be kept with the airtanker. A copy must be retained by the aircraft inspector and a copy by the contracting officer or their representative.

45 – Inspection Records and Reporting

45.1 – Applicable Forest Service Guides

In addition to the aircraft inspection policy established in this chapter, aircraft inspectors must use the Forest Service Aircraft Inspection Guide and the Forest Service Airworthiness Assurance Guide to ensure compliance with policy.

45.2 – Reporting Malfunctions and Maintenance Deficiencies

Forest Service aircraft inspectors have the responsibility to ensure contractors submit an FAA Form 8010-4, Malfunction or Defect Report, or file electronically in the FAA's Service Difficulty Reporting (SDR) system any maintenance deficiency identified in 14 CFR Part 21.3(c), 135.415, or for those discrepancies they consider significant.

45.3 – Contract Specifications Familiarity

Aircraft inspectors must be familiar with the appropriate contract specifications when inspecting an aircraft for use.

1. Initial inspections of aircraft should be accompanied by a Contracting Officer Representative thoroughly familiar with the provisions of the contract, if they are available.

2. Aircraft inspectors must use an Airworthiness Branch approved checklist developed from the contract specifications to ensure the contractor understands the Government's expectation for contract compliance.

45.4 – Contractor's FAA Operating Authority

Aircraft inspectors must verify the contractor's FAA operating authority by reviewing the operating certificates (14 CFR, Parts 121, 133, 135, 137, and 145, as applicable). Aircraft inspectors must ensure the following publications specifications and personnel and equipment listings are in place:

1. Approved operations and maintenance manuals.
2. Federal Aviation Administration-approved operations specifications.
3. Current list of approved aircraft by serial identification numbers.
4. Current list of maintenance personnel, certificate numbers, experience, and training record.

45.5 – Aircraft Inspectors' Review of Records

Aircraft inspectors must review the following records:

1. Aircraft, engine, gearbox, and propeller or rotor logbooks.
2. Maintenance records.
3. Applicable FAA Airworthiness Directives and Manufacturer's Service Bulletins.
4. Aircraft weight and balance data for currency and compliance with the contract or rental agreement specifications.
4. Aircraft performance charts, which ensure the aircraft performs within the contract or rental agreement specifications.
5. Required Special Use Mission equipment.

45.6 – Facilities Inspections, Contract and Rental Agreement Operators

Ensure that all contract and rental agreement aircraft services meet Forest Service policy and the operational and safety standards required by the FAA-approved operating authorities and specifications.

45.7 – Avionics Inspection

Document the inspection on the appropriate checklist.

1. Complete all applicable contract items on the report and indicate in the boxes provided whether the avionics equipment is approved or whether re-inspection is required; or
2. In the case of re-inspection, indicate if the avionics equipment is approved after correction of the discrepancy, or if the equipment is rejected after re-inspection.

46 – Standards for Forest Service Cooperation Aircraft

46.1 – Standards for Cooperator Aircraft Offered for Federal Use (including Federal Excess Personal Property)

All cooperator contracted aircraft offered for use on National Forest system lands must meet current airworthiness standards in the applicable Forest Service or Department of the Interior Call When Needed aircraft services contracts.

Cooperator owned aircraft, including Federal Excess Personal Property and non-certificated aircraft must meet NASF Cooperator Aviation Standards for Interagency Fire or the applicable Call When Needed contract standard (as applicable) if the NASF standard does not have an applicable standard for the aircraft offered.

Cooperator owned New Production Restricted Category aircraft may be approved for carrying agency personnel based on review of the Cooperator program and scheduled quality assurance reviews.

Cooperators must be approved by letter under dual (Regional Aviation Officer and OAS Regional Director) signature based on this standard following review by a designated Regional aircraft inspector. Regional Aviation Officers may make certain exemptions for mission equipment only if minor or it only impacts the approving agency (i.e. radio, hook) and not the Interagency Fire community at large. Exemptions must be documented in the cooperator approval letter.

Forest Service regions may use aircraft approved by the DOI for specific Forest Service special use mission flights without re-inspection.

Cooperator airtankers must meet equivalent Forest Service Airtanker Contract standards and be under a Master Agreement between the Forest Service and the cooperating agency.

46.11 – Airworthiness of FEPP Aircraft

1. Regulation 14 CFR 91.403 provides that “the owner or operator of an aircraft is primarily responsible for maintaining that aircraft in an airworthy condition...” When the States have operational control, as outlined in 14 CFR Part 1, the Forest Service is not responsible for airworthiness of FEPP aircraft. Under these circumstances the Forest Service expects the States, as operators, to comply with the maintenance and airworthiness requirements of 14 CFR 91.403.

2. If a FEPP aircraft is used for any purpose on National Forest system lands or Forest Service Direct Protection Areas, the Forest Service requires that aircraft must meet

equivalent aircraft contract standards for airworthiness, regardless of the ownership or operator of the aircraft.

46.11a – Modification of FEPP Aircraft

Any modification to a FEPP aircraft must meet equivalent aircraft contract standards for airworthiness. The State must receive approval from the Forest Service for any modification that affects or enhances performance prior to installation/modification. The request must be submitted to the Regional Aviation Officer and requires approval by the Branch Chief, Airworthiness.

Regardless of modification, all FEPP aircraft must retain their original military model designations unless an FAA Airworthiness Certificate has been issued to the serial number specific aircraft for an FAA Type Certificated model.

46.2 – Non-federally Approved Aircraft

Refer to FSH 5709.16, chapter 30.31.

47 – Other Federal Agency Aircraft

47.1 – Department of Defense Aviation Assets

The Washington Office Deputy Chief or Regional Forester, through an agreement with Department of Defense (active and reserve), authorizes federally activated aviation assets on National Forest system lands. This must be in accordance with the Military Use Handbook and the Forest Service Aviation Military Use Plan.

The Regional Aviation Officer must approve, in writing, the use of state activated National Guard aviation assets on National Forest system lands. This must be in accordance with the Military Use Handbook and the Forest Service Aviation Military Use Plan.

Refer to FSH 5709.16, chapter 55.1 for flightcrew approvals.

47.2 – Federal Executive Agency (non-DOD) Aviation Assets

The Deputy Chief, State and Private Forestry must approve, in writing, the use of Federal Executive Agency (non-DOD) aviation assets.

Refer to FSH 5709.16, chapter 55.2 for flightcrew approvals.

48 – Aircraft Owner and Financial Management

48.1 – Acquisition of Aircraft

Acquisition of aircraft, including UAS, will be approved by the Washington Office Director, Fire and Aviation Management (FSH 5709.16, chapter 11.2).

48.11 – Replacement Aircraft Aviation Business Cases

Aviation business cases for replacement of current WCF aircraft, using WCF funds and/or program funds, must be approved by the Deputy Chief, State and Private Forestry, and must be kept on file for OMB review.

48.12 – Working Capital Fund (WCF) Aircraft

Manage all Forest Service owned and operated aircraft (except UAS costing \$25,000 or less) through the Working Capital Fund (WCF) in accordance with FSM 6580, FSH 6509.11f, and the WCF Aircraft User Guide. All WCF aircraft are owned by the agency and hosted by a region or the Washington Office.

All UAS costing \$25,000 or more and with a useful life of more than two years must be managed through the WCF. This is the cost for the entire system, including airframe, sensors, ground station, and other support equipment.

The purpose of the WCF is to provide a sustainable funding mechanism for the operation and replacement of agency owned aircraft that support fire suppression and non-fire aviation activities. WCF aircraft are subject to the same regulations regarding capitalization, de-capitalization, and depreciation as other WCF non-expendable personal property.

The Working Capital Fund Accounting Operations Handbook, FSH 6509.11f provides greater detail on how to accomplish day-to-day management, operations, and tasks, and the WCF Aircraft User Guide provides more aircraft specific information.

Working Capital Fund (WCF) aircraft that are owned, leased, bailed, or borrowed must have:

1. The same equipment requirements as contracted aircraft performing those same special use missions.
2. Standardized configurations of accessories, equipment, and paint schemes for like make/model approved by the Branch Chief, Airworthiness.
3. An operations plan, specific to the aircraft missions. Refer to FSH 5709.16, chapter 30.
4. Working Capital Fund aircraft operated by the Forest Service must be maintained in accordance with the OEM's most recent revision of inspection program applicable to the serial number of aircraft being inspected or an inspection program approved by the Branch Chief, Airworthiness.

48.12a – Modification of WCF Aircraft

Proposed aircraft modifications or configuration changes must be approved in writing by the Branch Chief, Airworthiness or designee. Proposed modifications must be submitted by the Regional Aviation Officer where the aircraft is hosted.

48.2 – Maintenance Records

1. Ensure that each Forest Service aircraft carries a maintenance record (FS-5700E, Aircraft maintenance Log) for recording flight hours, time in service, maintenance discrepancies, current aircraft inspection, and special aircraft inspection status in accordance with 14 CFR, Part 91.417. Flightcrew members are required to initial and date maintenance discrepancies entered into the maintenance log.
2. Ensure that previously noted discrepancies have been corrected by a maintenance sign-off or placed in deferred status prior to further flight. This is the responsibility of the pilot-in-command.
3. Ensure that maintenance personnel document the inspections and maintenance performed in the appropriate maintenance record (guides or forms) or logs, such as airframe, engine, and propeller. Include this documentation as part of the permanent maintenance record (maintained at the aircraft's base of operations) containing all pertinent maintenance information, including but not limited to:
 - a. A listing of Airworthiness Directives (ADs) issued by the FAA and the manufacturer's Service Bulletins, which are applicable to the type of aircraft, engine, propeller or rotor, and equipment. Include in the listing the date and method of compliance and, if recurring, the next date/time due.
 - b. Retain a copy of the completed inspection records, such as inspection guide, maintenance discrepancy list, and other records associated with the inspection, at base of operations for the aircraft.
 - c. Retain all 5700E for WCF, Leased, Bailed, or Contracted aircraft at the assigned base of operations unless directed otherwise.

48.21 – Aircraft Flight Log 5700E Documentation and Maintenance Reporting Requirements

Flightcrew members must document the aircraft flight log (5700E) and accomplish the following for Forest Service WCF Fleet, Leased, or Bailed aircraft:

1. Complete all applicable sections of the 5700E.
2. Initial and date maintenance discrepancies entered into the 5700E.
3. Report Operational Loads Monitoring data as specified by the program identified for the aircraft either electronically or mail as directed by the Regional AMI.
4. Send a copy of the 5700E either electronically or by mail to the Regional AMI every 14 days or 40 flight hours.
5. Report flight times, cycles, and maintenance discrepancies to the responsible entity for maintenance of the aircraft as directed by the Regional AMI.

48.22 – Airworthiness Directives, Service Bulletins and Additional Continued Airworthiness Requirements

1. Each WCF aircraft must comply with all applicable Federal Aviation Administration (FAA) Airworthiness Directives (ADs) and ensure they are documented in accordance with 14 CFR 91.417 (a) (2) (v). This also includes ADs applicable to a civil certificated model derivative of a non-certificated WCF aircraft.
2. Each WCF aircraft must be in compliance with all Service Bulletins (SBs) with a time compliance requirement, referenced in an FAA Special Airworthiness Information Bulletin (SAIB), or are designated mandatory by the manufacturer.
3. Each aircraft's maintenance schedule must include mandatory component retirement, replacement, or overhaul time as specified in the OEM Airworthiness Limitations Section or equivalent OEM document and must be in compliance with them.
4. Each maintenance schedule must also include or have incorporated all recommended and/or required manufacturer programs such as Continued Airworthiness Program (CAP), Structural Inspection Documents (SID), Supplemental Structural Inspection Documents (SSID), Corrosion Prevention and Control Programs (CPCP), Electrical Wiring Interconnection Systems (EWIS) and must be in compliance with them.
5. Aircraft must be reweighed on the following schedule:

Single engine airplanes (12,500 or less) must be reweighed every 5 years.

All other aircraft must be reweighed every 36 months.

48.23 – Parts and Components Approval

Install only FAA-approved and traceable parts or components on certified aircraft. Former military aircraft may have Department of Defense (DOD) approved components and parts installed, provided the integrity of the parts, traceability, and condition can be verified, and they comply with the requirements of FMR 102.33.

1. Life-limited parts must be retired at the appropriate time. Shelf life-limits must also be adhered to.
2. Overhaul time-controlled parts or systems in accordance with the approved inspection program.

Refer to Forest Service Aircraft Inspection Guide for further direction.

48.24 – Inspection Frequency

Complete all required inspections within the approved time limits. The Branch Chief, Airworthiness may approve extensions when the safety of flight is not compromised (40.41).

48.25 – Other Documentation

Each Forest Service unit operating and/or maintaining aircraft must have current and applicable documents (manuals) covering the aircraft, operations, inspection, and/or maintenance that unit performs. These documents must include original equipment manufacturer (OEM) flight and maintenance manuals for the aircraft operated, 14 CFRs, and inspection guides and service publications for the maintenance and operations conducted.

48.26 – Reporting Malfunctions and Maintenance Deficiencies

1. Report to the Branch Chief, Airworthiness all maintenance deficiencies or malfunctions occurring during operations or maintenance periods that are significant enough to affect not only that individual aircraft but also similar aircraft types used by the Forest Service.
2. Clearly describe and document significant deficiencies by completing the FAA Malfunction and Defect Report (FAA Form 8010-4); and if the deficiency has the potential to cause an aviation-related mishap (FSM 5720), it must also be reported using the Forest Service SAFECOM reporting system.

48.27 – Maintenance of WCF Aircraft While Out of Region

With prior coordination, the authority for the following items may be delegated to the receiving Region's Regional aircraft inspector.

1. The hosting Region has the responsibility to schedule maintenance, preventative maintenance, and inspections while the Region's aircraft are out of the Region.
2. The hosting Region has the responsibility to ensure all record entries are made on the appropriate airframe, engine, propeller, and accessory forms, and on form FS-5700E while the Region's aircraft are out of the Region.
3. The Region where the WCF aircraft are hosted must retain the responsibility to ensure the airworthiness of the aircraft while operating in their Region or in other Regions.

48.28 – Minimum Equipment List (MEL)

Aircraft must not be operated with inoperative equipment, unless it has an approved minimum equipment list, as required by 14 CFR, Part 91.213, Inoperative Instruments, and Equipment, or unless otherwise approved by the Branch Chief, Airworthiness.