USDA FOREST SERVICE
Fire and Aviation Management

AIRCRAFT INSPECTOR GUIDE

2025

A Tribute to John Nelson, the First Airworthiness Branch Chief

It is with great honor and respect that we dedicate this book to John Nelson, the first Airworthiness Branch Chief, whose visionary leadership shaped the foundation of airworthiness oversight. In the early 2000s, when many saw the landscape of Forest Service aviation as a well-worn path, John recognized a critical gap in the oversight of contract aircraft providers. With a profound understanding of both the challenges and opportunities within the industry, he foresaw the need for a more structured, formalized process to ensure the safety and reliability of aircraft operated for the wildland fire role.

John's work was nothing short of pioneering. At a time when change seemed daunting, he was unafraid to chart new territory. His vision led to the creation of robust procedures that would go on to become the standard for overseeing contract aircraft providers, ensuring that safety and compliance were never compromised. His leadership was not only instrumental in transforming the way the Forest Service and cooperating agencies approach airworthiness but also in building a culture of diligence, accountability, and continuous improvement.

John’s foresight transcends the technical and operational challenges of his time. His ability to bring people together, communicate complex ideas, and drive organizational change was as exceptional as his technical acumen. Under his guidance, the Airworthiness Branch has become a dynamic, responsive, and proactive force ensuring the highest standards of safety across the aviation community.

This book stands as a testament to his legacy—a legacy that continues to shape the future of airworthiness oversight. His work, his commitment, and his unwavering dedication to ensuring that safety and lives of our employee's operating and using Forest Service assets have left an indelible mark on the industry.

As we reflect on his contributions, we are reminded of the power of vision, the strength of leadership, and the lasting impact one individual can have in shaping an entire field. John Nelson is a visionary, trailblazer, and a leader whose work will continue to guide and inspire the Airworthiness Branch for many years to come.

To John, we say thank you. Your legacy lives on in the safety we now take for granted, the procedures we rely on, and the standards we strive to uphold.

A Note of gratitude and Purpose for this Guide

Initially developed by Gil Elmy in 2006, this guide is the first tool given to each incoming Inspector to the United States Forest Service Airworthiness Branch upon hire and will serve as a primary reference in the accomplishment of their duties throughout their careers. Prior to its development, training was informal, nonstandard, and based on “tribal” knowledge. We owe a debt of gratitude to Gil and the work he undertook on his own initiative. It has made a lasting impact on the Forest Service Aviation Maintenance Community. Thanks!

The Aircraft Inspector Guide provides guidance and reference material for National and Regional Aviation Safety Inspectors during the day-to-day performance of their duties. It replaces the Aircraft Inspection Guide Handbook which is now obsolete. This new revision has been reformatted, edited, and reviewed by a team from the US Forest Service FAM Airworthiness Group and is 508 compliant.

To submit requests for changes and/or additions for future revisions of this guide, users should reference the Revision Request Form.

The use of trade, firm, or corporation names or illustrations of any particular product in this guide is for the information and convenience of the reader and does not constitute an endorsement of any product, service, or aircraft make and model to the exclusion of others that may be suitable.

Agency Reorganization and Interagency Alignment

As of the time of this revision, efforts are in progress to align inspection policies and contract standards with interagency partners to obtain common goals and provide for one inspection and one card for each aircraft each year. Additionally, the USDA and Forest Service are undergoing reorganization. These changes will be incorporated into future revisions.

Table of Contents

Revision List

This section documents revisions of the Aircraft Inspector Guide (AIG).

Section No.	Description	Revision/Tech Bulletin No.	Date
IR	Initial Release		2018
All	Global Revision. See Documentation.		2025

Revision Request Form

Please use the following form to submit revision requests for the Aircraft Inspector Guide.

USDA Forest Service

Fire and Aviation Management

Airworthiness Branch

Submit change requests to the Airworthiness Branch Chief

AIRCRAFT INSPECTOR GUIDE

REVISION REQUEST FORM

CHAPTER	SECTION OR PARAGRAPH NUMBER	PAGE
Original Text in Question:		
Description of Proposed Revision:		

Attach additional details, supporting documentation, recommendations, and/or comments for use in approval evaluation.

Change Requested By	Title and Region	Date
Change Approved By	**Title**	**Date**

Approval Letter

Reserved for Approval Letter for the Aircraft Inspector Guide.

Chapter 1 – Introduction

1-1 Objectives

The objectives of this guide are to:

1. Define and standardize National maintenance management, inspection, and operating procedures to ensure safe and efficient operations.

2. Promote Agency wide standardization of aircraft inspection and maintenance procedures for all airworthiness personnel in the USFS.

3. Provide familiarization, guidance as well as experience and training requirements to Forest Service personnel on the policies, procedures, and practices associated with aircraft inspection and approval.

4. Provide Forest Service employees with broad guidance for attaining appropriate approvals on the Forest Service Authorized National Aircraft and Avionics Inspectors List in accordance with Forest Service Handbook 5709.16, Chapter 40.

1-2 Authority

The aviation management directives of FSM 5700 and FSH 5709.16 provide the authority for this guide.

1-3 Scope

The procedures contained in this guide apply to Agency owned, contractor, and cooperator aircraft maintenance and inspection procedures for airplane, helicopter, and Unmanned Aircraft Systems (UAS) operations. This guide provides general guidance and information for managing aircraft maintenance programs.

1-4 Revisions

This guide will be periodically reviewed by the Airworthiness Branch as needed. Changes may be recommended using the revision request form.

Chapter 2 – Organization

2-1 Introduction

This chapter provides a brief overview of the Forest Service aviation organization. Regional aviation staffs may vary depending on the Region, but through various lines of authority, Aviation Safety Inspectors (Airworthiness and Avionics) can trace their authority directly back to line officers. Throughout this guide the terms Aviation Safety Inspector, and Aircraft Inspector will be used interchangeably.

The Washington Office in Boise is responsible for the National program, and in coordination with the Regions, develops aviation policy and procedures. Regional staffs are responsible for the program in their Region, their delegated national duties and have the responsibility to follow and implement National policies and procedures.

The Fire and Aviation Management (FAM) Organization Chart at the end of this chapter shows the major offices below the Secretary of Agriculture and the inspector's relative position in the organization. As stated above, regional aviation staffs vary depending upon the Region, but the primary offices are shown in this organization chart.

2-2 Key Aviation and Aircraft Inspector Positions and Duties

Key aviation and Aircraft Inspector positions are listed below. For current guidance on duties and responsibilities and complete descriptions, review FSM 5700, FSM 5704, and FSH 5709.16. Regional employees implement and manage local aviation programs in coordination with national guidance from the Washington Office.

Airworthiness Branch Chief

Provides national leadership for agency Aircraft and Avionics Inspector qualifications and training standards, aircraft and equipment standards for all aircraft operated by the Forest Service, and aviation maintenance programs.

Regional Aviation Officer (RAO)

Implements and manages the aviation program for their region and has oversight of regional aviation employees.

Regional Aviation Safety Officer (RASO)

Provides safety oversight of aviation operations in their region. Acts independently of aviation operations.

Aviation Safety Inspector – Airworthiness (ASI-Airworthiness)

Inspects and approves contractor, agency, and cooperator aircraft. Provides 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.

Aviation Safety Inspector – Avionics (ASI-Avionics)

Inspects and approves contractor, agency, and cooperator avionics and UAS. Provides oversight and continuing evaluation of the aviation program to accomplish National, Regional, Forest, and District level aviation objectives within the scope of the avionics program.

Avionics Program Manager

Provides oversight and direction for avionics matters within the Forest Service aviation program.

Aeronautical/Aerospace Engineer

Provides oversight of Forest Service-owned Type Certificate Data Sheets (TCDS) and Supplemental Type Certificates (STC) and the Forest Service Operational Loads Monitoring (OLM) Program.

Working Capital Fund Fleet Maintenance Technician

Inspects, maintains, and repairs Forest Service WCF aircraft assigned to their region.

Unmanned Aircraft System (UAS) Inspector (non-ASI)

Non-ASI UAS Inspectors are generally the regional UAS Specialists. They are designated UAS pilots and inspect MU3 UAS in their region. They may also return these UAS to availability provided they are not the active pilot.

2-3 Organization Chart

See the Airworthiness Branch 5700 Shared folder for the current organization chart.

Chapter 3 – Responsibilities, Qualifications, and Training

3-1 Introduction

This chapter establishes the common duties and responsibilities of an Aviation Safety Inspector (ASI) per FSH 5709.16, Chapter 40. A Regional Aircraft Inspector may have the dual role of Program Manager for their Region's Forest Service Working Capital Fund (WCF) Fleet Aircraft Maintenance Program and Aircraft Inspector, with National and Regional responsibilities.

The job of an Aviation Safety Inspector requires proficiency in several subject areas. Reference the current task book for your position as a baseline for your core proficiency areas. Additional information can be found within this guide. Inspectors are not expected to be completely knowledgeable of all areas listed (i.e., 14 CFR Part 21, 23, 25, etc.); instead, they should know the general requirements and be familiar enough with these parts to be able to readily understand and find a reference when needed. Inspectors shall be thoroughly familiar with the information found in FSM 5700, FSH 5709.16, and this guide.

3-2 Aviation Safety Inspector (ASI) - Airworthiness

Each Region will have at least one qualified ASI, Airworthiness. The ASI – Airworthiness is commonly referred to as an Aircraft Maintenance Inspector or "AMI" as the common vernacular.

3-2-1 Duties and Responsibilities

1. Obtain MA1-4, MH1-4 and MU1-4 inspector designations as you are able, see Chapter 3-8. All inspectors are expected to contribute to the national effort.

2. Ensure Forest Service and contractor aircraft must be maintained in accordance with 14 CFR.

3. Provide leadership for the inspection, maintenance, repair, and return-to-service of WCF aircraft assigned to their Region and ensure assigned Forest Service aircraft are maintained in the standard configuration as determined by the Airworthiness Branch Chief.

4. Conduct pre-use inspection of:

    a. Contract aircraft.

    b. Cooperator aircraft.

    c. UAS requiring an MU1 rating.

5. Return contract aircraft and UAS to availability (RTCA/RTA)

6. Stay apprised of:

    a. Problems affecting the airworthiness of contract aircraft. Inspectors must support managers in the field in addressing maintenance-related contract issues and give guidance when necessary.

    b. Operational tempo and issues within their regions. Inspectors approving aircraft in other regions must communicate / coordinate with the appropriate regional inspector.

    c. Problems affecting the airworthiness of MU1 UAS operating in the Region and aid the field in resolving these problems. Inspectors must support managers in the field address maintenance-related issues and give guidance when necessary.

    d. Problems affecting the airworthiness of contracted and agency-owned aircraft as well as those same makes and models in use globaly.

7. Provide oversight and continuing evaluation of the aviation program to accomplish National, Regional, Forest, and District level aviation objectives.

8. Monitor applicable Aviation Safety Communiqués (SAFECOMs), comment as appropriate, and communicate significant issues at the Regional and/or National organizational levels.

9. Maintain access to a current aviation technical library specific to the types of WCF aircraft assigned to the Region.

10. In addition, inspectors shall maintain access to reference copies of maintenance manuals for some of the more common aircraft operated by contractors in their Region. Some of these manuals may be available in the Airworthiness Branch 5700 Shared folder or OEM websites.

11. Although not recommended, 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 FSH 5709.16, Chapter 40. Inspectors who delegate their authority shall maintain responsibility for that inspection. Delegations of authority are extremely rare and need the approval of the Airworthiness Branch Chief.

12. Provide oversight of inspection programs and airworthiness of WCF and contract aircraft.

13. Monitor the progress of maintenance being performed by contract maintenance providers on WCF aircraft. Never approve WCF aircraft for return to service unless compliant with their type certificate and/or standards for replacement of life-limited parts and overhaul frequencies. Reference Regional Maintenance Procedures Guides (MPG).

14. Provide guidance to contractors on aircraft requirements. Ensure guidance is limited to current contracts and based on regulations, policy, and contract requirements. Questions about active solicitations must be directed to the appropriate Contracting Officer. Inspectors should not comment on possible future requirements. These frequently change throughout the development process.

3-2-2 Qualifications

All Aircraft Inspectors must possess a current Federal Aviation Administration (FAA) Mechanic's Certificate, with both Airframe and Powerplant ratings (14 CFR 65.73). Additionally, inspectors must maintain an Inspection Authorization (IA) (14 CFR 65.91).

Inspectors are not required to have an in-depth knowledge of all aircraft; however, a broad understanding of general aircraft systems is essential. This will allow ASIs to make informed decisions when returning WCF aircraft to service or contracted aircraft to contract availability.

Obtain an Incident Qualification Card (Red Card) as a Technical Specialist (THSP)

Inspectors shall be familiar with the information contained in the following publications and interagency guides:

1. 41 CFR 102-33 Management of Government Aircraft.
2. NWCG Standards for:
    a. Helicopter Operations (PMS 510).
    b. Aerial Supervision Operations (PMS 505)
    c. Airtanker Operations (PMS 514)
    d. Scooper Operations (PMS 518)
    e. Fire UAS Operations (PMS 515)
3. National Interagency Standards for Resource Mobilization
4. Special Mission Airworthiness Assurance Guide (SMAAG).

5. WCF Aircraft User Guide (if applicable).

3-3 Aviation Safety Inspector (ASI) - Avionics

Each Region shall have at least one qualified ASI – Avionics. The ASI – Avionics is commonly referred to as an Avionics Inspector (AVI). See FSH 5704.34 and FSH 5709.16 for current requirements.

AVI's inspect contract aircraft and oversee WCF avionics contracts. To be effective, they must be familiar with avionics contract requirements, their history, common sources of conflict, and communications policy. See Chapter 8 for additional guidance.

Inspectors must keep abreast of changing avionics technology, land mobile radio requirements, communications policy revisions, and fire communications. Many of the Forest Service's avionics requirements align more with what the person on the ground needs rather than FAA requirements.

3-3-1 Duties and Responsibilities (All)

1. Provide oversight for the inspection, maintenance, and repair of avionics in WCF aircraft assigned to your region and ensure the aircraft are maintained in the standard avionics configuration as determined by the Airworthiness Branch Chief.

2. Ensure Forest Service and contract aircraft must be maintained in accordance with 14 CFR.

3. Obtain all AV inspector designations, See Section 3-9.

4. Perform inspections, evaluate corrective actions, and recommend approval of contracted and cooperator aircraft avionics.

5. Although not recommended, 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 FSH 5709.16, Chapter 40. Inspectors who delegate their authority shall maintain responsibility for that inspection. Delegations of authority are extremely rare and need the approval of the Airworthiness Branch Chief.

6. Stay apprised of:

    a. Problems affecting avionics in aircraft operating in your area of responsibility and aid the field in resolving these problems. Help managers in the field address avionics related contract issues and give guidance when necessary.

b. Changing avionics technology, land mobile radio requirements, communications policy revisions, and fire communications.

7. Provide oversight and continuing evaluation of the aviation program to accomplish National, Regional, Forest, and District level aviation objectives.

8. Monitor applicable Aviation Safety Communiqués (SAFECOMs), comment as appropriate, and communicate significant issues at the Regional and/or National organizational levels.

9. Provide guidance for contractors on avionics requirements. Ensure guidance is for current contracts and based on regulations, policy, and contract requirements. Questions about active solicitations must be directed to the appropriate Contracting Officer. Inspectors should not comment on possible future requirements. These frequently change throughout the development process.

10. Assist with the development of national avionics standards and ensure they are implemented regionally.

3-3-2 Duties and Responsibilities (GS-13 with UAS Oversight)

1. Provide oversight of airworthiness and aircraft approval activities within regional programs for UAS.

2. Obtain inspector designations for MU2, MU3, and MU4

3. Perform inspections, evaluate corrective actions, and approve unmanned aircraft systems (UAS) requiring an MU2 designation.

4. Train potential inspectors on the concepts and procedures of airworthiness and aircraft inspections as they relate to UAS.

5. Review the training and experience of potential inspectors nominated by the Regional UAS Program Manager for MU3 designation and provide recommendations regarding their approval.

6. Support and manage national avionics projects with direction from the National Avionics Program Manager

3-3-3 Qualifications

All Avionics Inspectors must hold and maintain currency in one of the following:

1. An FCC General Radiotelephone Operator License.

2. An ASTM/NCATT Aircraft Electronics Technician certification with at least one endorsement.

Obtain an Incident Qualification Card (Red Card) as a Technical Specialist (THSP).

As an avionics inspector, you shall be knowledgeable of the operations and theory of avionics systems and the equipment being inspected. You must have access to the appropriate test equipment to verify the integrity of the avionics systems requiring approval.

You shall be familiar with avionics contract requirements, their history, common sources of conflict, and communications policy. You shall keep abreast of changing avionics technology, land-mobile radio requirements, and fire communications. You should be familiar with the information contained in the following publications and interagency guides. See Appendix C.

1. FS/OAS A-24, Avionics Operational Test Standards.
2. FS/OAS A-30 Radio Interference Test Procedures.
3. NWCG Standards for:
    a. Helicopter Operations (PMS 510).
    b. Aerial Supervision Operations (PMS 505)
    c. Airtanker Operations (PMS 514)
    d. Scooper Operations (PMS 518)
    e. Fire UAS Operations (PMS 515)
4. National Interagency Standards for Resource Mobilization
5. Special Mission Airworthiness Assurance Guide (SMAAG).
6. WCF Aircraft User Guide (if applicable).
7. FSH 6609.14 Telecommunications Handbook.
8. 47 CFR Part 80 to End.
9. Manual of Regulations and Procedures for Federal Radio Frequency Management – National Telecommunications and Information Administration (NTIA).

3-4 Aeronautical/Aerospace Engineer

3-4-1 Duties and Responsibilities

1. Manage Forest Service Operational Loads Monitoring (OLM) Program.
2. Provide engineering oversight to National Airworthiness Program.
3. Participate as member of contract technical evaluation teams to validate proposals.
4. Act as a technical advisor to the Interagency Airtanker Board (IAB) and is a member of the Forest Service Airworthiness Branch.
5. Provide oversight of Forest Service owned Type Certificate Data Sheets (TCDS) and Supplemental Type Certificates (STC).
6. Provide engineering expertise for Forest Service contracted, cooperator, and WCF aircraft.

3-5 WCF Maintenance Technician

Regions may have WCF Maintenance Technicians. See FSH 5709.16 §41.12.

3-6 Unmanned Aircraft Systems (UAS) Inspector – non-ASI

Each Region should have enough UAS Inspectors to meet the needs of their UAS program. Regional UAS Specialists generally serve as the MU3 inspectors. Regions may request additional MU3 inspectors on a case-by-case basis. Regional Avionics Inspectors serve as MU2 inspectors and provide airworthiness oversight of the Regional UAS Program and the MU3 inspectors. See the entry for ASI - Avionics. Regional Airworthiness Inspectors serve as MU1 inspectors, when needed. See the entry for ASI - Airworthiness.

UAS must be maintained in accordance with 14 CFR and the aircraft's agency approval. Inspectors must also ensure that fleet aircraft are maintained in the standard configurations approved by the USFS, UAS Evaluation Committee.

3-6-1 Duties and Responsibilities

1. Perform inspections, evaluate corrective actions, and approve UAS requiring an MU3 designation.

2. Evaluate UAS return-to-availability requests to ensure maintenance actions are appropriate, performed in accordance with manufacturer's procedures, completed correctly, and documented prior to flight.

3. Coordinate with regional MU2 inspectors to meet airworthiness requirements of the regional UAS program.

4. Monitor the maintenance and inspection status of regional UAS to ensure continued airworthiness.

5. Train potential inspectors on the concepts and procedures of airworthiness and aircraft inspections as they relate to UAS.

6. Remain informed of problems affecting UAS operations and aid the field in resolving these problems. Help field-users address UAS related contract issues and give guidance when necessary.

7. Monitor applicable SAFECOMs, comment as appropriate, and communicate significant issues at the Regional and/or National organizational levels.

3-6-2 Qualifications

Non-ASI UAS Inspectors must be agency approved UAS pilots. Trainees must complete the UAS Inspector Task Book prior to approval for MU3 and MU4 designations.

Inspectors must be familiar with UAS requirements, common sources of conflict, and communications policy. You must stay apprised of changing UAS technology.

3-7 Training

This section gives broad guidance on training and knowledge requirements necessary to be approved on the USFS Approved Inspector List. A new inspector may be included on the Approved Inspector List prior to completing the required FAA Academy Courses if approved by their Regional Aviation Officer (RAO) or the Airworthiness Branch Chief. Initial training consists of FAA Academy courses and On-the-Job Training (OJT) provided in cooperation with the Washington Office and Regions. The ASI trainee task book provides details on minimum training requirements.

3-7-1 FAA Training

Within the two years of hire (or as soon as practical), all Aviation Safety Inspectors (Airworthiness and Avionics) are required to complete the FAA Academy indoctrination courses for airworthiness inspectors. In the event the FAA courses are not available in the required timeframe, or under certain other circumstances, this may be extended

until the courses are available or equivalent training is accomplished. The current courses are:

1. FAA21000064 General Aviation Airworthiness (GAAW) Practical Applications Workshop #1.

2. FAA21000182 General Aviation Airworthiness Aircraft and Airman Certification Practical Applications Workshop.

It is mandatory to complete all prerequisite courses prior to attending the instructor led courses. This is a Forest Service requirement even if the FAA waives prerequisites for non-FAA employees. Contact the Airworthiness Branch for enrollment details.

The following FAA courses are highly recommended and should be taken as soon as practical after attending the mandatory courses:

1. 21026 Suspected Unapproved Parts.

2. 21811 Aircraft Alterations and Repairs.

3. 21016 Part 21.

4. 21058 Certification/Surveillance of Part 145 Repair Station.

5. 21000094 Fuel Tank Safety and Electrical Wiring Interconnection Systems (EWIS).

3-7-2 Contracting Officer's Representative (COR) Training

There are three levels of COR training and certification that build on training and experience:

1. COR Level I – Requires no experience and the COR I course.

2. COR Level II – Requires one year of COR Level I work experience as a designated COR and the COR II course and 40 hours of bi-annual COR training (CLPs). Designation as an Alternate COR does not count towards the experience requirement. The Contracting Officer (CO) may designate multiple COR's. Contact the CO to change any alternate designations to COR designations.

3. COR Level III – Requires two years of COR Level II work experience and the COR III courses and 60 hours of bi-annual COR training (CLPs).

Inspectors must complete training that meets the requirements for COR Level I prior to designation as an airworthiness or avionics inspector and prior to conducting inspections on contractor UAS. All inspectors should attend COR Level II training regardless of the inspector's intended level of certification.

The Federal Acquisition Institute (FAI) provides requirements for certification and continuous learning. Certifications are managed through the FAI dashboard listed in Appendix C. To receive certification, an application must be submitted with copies of COR designation/appointment letters to document experience.

Training courses are available through the FAI dashboard and through the regional acquisition offices providing classroom training.

3-7-3 Safety Management System (SMS) Training

As part of the Forest Service SMS program, each employee needs to know their SMS roles and responsibilities, understand the comprehensive approach to managing safety, and promote a safety culture by maintaining the four pillars of:

1. Agency doctrine, policy, and objectives.
2. Safety risk management.
3. Safety assurance.
4. Safety promotion.

SMS training is required initially and is recurring (every 5 years). While there are several options for SMS Training, it may be accomplished using one of the following sources: IBAC, ARGUS, HAI course, FAA, or other approved sources. Consult your RASO or the Airworthiness Branch for further information.

3-7-4 Suggested Training for All Inspectors

1. Aviation Maintenance Human Factors / Maintenance Resource Management.
2. Region-Specific On-the-Job Training (OJT).
3. Aviation Management Course.
4. Aircraft Accident Investigation.
5. Introduction to Incident Command System (ICS 100) and Introduction to National Incident Management System NIMS (IS 700) for Technical Specialist (THSP) Qualification in Incident Command System (ICS).
6. Interagency Aviation Training (IAT): A100, A302 (Must have to get THSP / Red Card)

3-7-5 Scheduling and Obtaining Training

It is your responsibility as a trainee to coordinate your training. It is generally accepted that OJT for Task Book completion will coincide with existing inspections scheduled by the trainer. Training Inspectors are not expected to travel to the trainee's area but may do so at their discretion.

Inspectors are required to travel extensively for their regular duties. Providing training to other inspectors is an additional duty that has the potential to significantly increase travel schedules. The extra burden that training places on schedules should be considered.

3-8 Foreign Travel

An ASI may be tasked to travel outside the continental United States to perform their duties on aircraft owned by a foreign government or contracted aircraft located outside the U.S. Pre-planning these trips well in advance is essential. A government passport is required for all official international travel. The passport application process takes approximately 45 days, but may take 60 days or more. This can be expedited if the inspector has a current civilian passport. Depending on the country, the inspector may be required to complete the High Threat Security Overseas Seminar (HTSOS) and/or the Foreign Affairs Counter Threat (FACT) course. For more information, contact the Foreign Travel Specialist for Forest Service International Programs, Washington Office.

3-9 USFS Approved Inspectors

After inspectors complete their task book, they may be recommended to the Airworthiness Branch Chief to be placed on the Forest Service Authorized National Aircraft and Avionics Inspectors List. The sections below describe the designations for which an inspector may be approved. Inspectors shall not approve aircraft, avionics, or UAS if they do not hold the corresponding designation.

3-9-1 Airworthiness Inspectors

It is the Agency's intent for all individuals hired as ASI, Airworthiness to be approved for MH1-4 and MA1-4. Approval for MU1 and MU2 are on a case-by-case basis.

Figure 3-1: Airworthiness Inspector Designations

Designation	Description
MA	**Maintenance Airplane**
MA1	Airtanker Initial Approval

MA2	Smokejumper 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
Designation	**Description**
MHA	IS-BAO Accredited Auditor, Rotor Wing

3-9-2 Avionics Inspectors

It is the Agency's intent for all special mission aircraft to receive an AV3 inspection each year. Due to personnel and schedule limitations, this may not always be possible. AV1 and AV2 permit some avionics inspections by appropriately designated inspectors as described below.

Figure 3-2: Avionics Inspector Designations

Designation	Description
AV	**Avionics**
AV1	Required to perform conformity checks and approve avionics on point-to-point aircraft and aircraft without an installed FM transceiver.
AV2	Required to perform functional testing and provide follow-on approval of avionics on reconnaissance airplanes with an installed FM transceiver and rotorcraft not approved for passengers. An AV2 designation does not permit the initial approval of avionics during any contract or agreement period.

AV3	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 requiring AV3 are lead planes, airtankers, scoopers, smokejumpers, helicopters approved for passengers, and aerial supervision aircraft.
AV4	Return aircraft to contract availability for avionics issues.

AV1 covers basic aircraft that have minimal differences from standard Part 135 operations. Conformity checks ensure the appropriate equipment is installed. No testing is required.

AV2 covers aircraft with a moderate amount of avionics beyond standard FAA requirements. The AV2 designation allows follow-on inspections, but initial inspections under each contract or agreement must be accomplished by an AV3 qualified inspector. This ensures that newly contracted aircraft fully conform to the applicable requirements and that aircraft previously approved cannot continue operation without periodic performance testing. Functional testing ensures previously tested equipment continues to function as intended. It requires basic equipment such as test plugs, a headset and portable radios. Avionics training must provide for a basic understanding of system theory, identification and operation of the equipment, and the ability to accurately make determinations as to the systems functionality.

AV3 covers aircraft with complex avionics systems. These aircraft require in-depth annual performance testing by an AV3 qualified inspector. Inspectors must have an advanced understanding of avionics system theory and interoperability. Performance testing requires specialized equipment. An avionics ramp test set designated by the National Avionics Program Manager is required. See Chapter 8 and Avionics Inspector Task Book for required equipment. Advanced avionics training requires completion of courses in avionics theory, application, troubleshooting, and maintenance resulting in a certificate from an industry recognized organization. Government inspectors require an FCC GROL or an ASTM NCATT AET certificate with at least one endorsement.

3-9-3 UAS Inspectors

MU1 designation requires approval as an Airworthiness Inspector and grants all MU1-4 designations. MU2 designation requires approval as an Airworthiness or Avionics Inspector and grants MU2-4 designations. MU3 designation for non-ASI's requires approval as an agency UAS pilot and grants MU3 & MU4 designations.

Figure 3-3: UAS Inspector Designations

Designation	Description
MU	**Unmanned Aircraft Systems**
MU1	Initial Approval for UAS Over 80 lbs., Type Certificated or equipped with a combustion engine.
MU2	Initial Approval for UAS From 20 lbs. to 80 lbs.
MU3	Initial Approval for UAS 20 lbs. and under.
MU4	Return-to-Availability for authorized UAS only.

Any UAS that is type certificated or is equipped with a combustion engine requires an MU1 inspection regardless of weight.

3-9-4 Inspector Currency Requirements

Each ASI must meet the following currency requirements to retain the authority to perform inspections. The Airworthiness Branch Chief may approve an alternate means of compliance (AMOC) on a case-by-case basis.

1. Attendance at the USFS/DOI Interagency Inspector Workshop annually.
    a. Each inspector must attend the airworthiness or avionics breakout group associated with the position description for which they are employed.
2. 24 hours of technical training annually or 48 hours biennially (FSH 5709.16.40).
3. Perform airworthiness or avionics inspections appropriate for your position description within the last calendar year.

3-9-5 Multi-discipline Inspectors

The USFS Airworthiness Branch has invested significant effort into developing the aviation safety inspector positions (AMI, AVI) as well as establishing individual requirements to support the unique aspects of each. The respective responsibilities of each must not be considered as collateral duties. The aviation assets, those that ride on them and work with them depend on inspectors being primarily focused on these duties to ensure that safe and reliable equipment is deployed to support our fellow employees.

Avionics and Airworthiness inspectors may train and complete task books for both disciplines but are not required to do so. This is intended to be used for continuing education and career growth. Designation as AV1 and AV2 may be used as supplements

for airworthiness inspectors that desire to expand their role and provide options for the agency when workloads and staffing levels limit the availability of avionics inspectors. Likewise, qualified avionics inspectors may be designated as MA4 or MH4 for the same reasons.

It is not intended for inspectors to perform both duties (AMI, AVI) on a regular basis. Inspectors must focus on the type of inspections covered by their position description. These disciplines require distinct knowledge and continuous training as well as a different mindset in execution. On occasions when inspectors perform cross-discipline inspections, they must focus solely on the primary duties of that inspection and ensure they have the appropriate currency required. Inspectors may not perform both the airworthiness and avionics inspections on the same aircraft for the same year unless approved by the Airworthiness Branch Chief on a case-by-case basis. Blanket approvals shall not be provided.

Chapter 4 – Administration, Internet, and References

These are the current programs of record and are subject to change as technology develops.

4-1 Introduction

Inspectors frequently use the SAFECOM system, Automated Flight Following (AFF), AvCheck, Computerized Aircraft Maintenance Management Software (CMMS), SMS (e.g. PRISM), Pinyon or the current USFS web/cloud-based storage drive, and internet-based Tech Pubs. A list of useful websites is also provided in Appendix C.

4-2 SAFECOMs

SAFECOMs are used in the documentation, tracking, and follow-up of corrective actions related to safety issues. A SAFECOM reports any condition, observation, act, maintenance problem, or circumstance with a pilot or aircraft that has the potential to cause an aviation-related mishap.

A profile must be requested in coordination with the Regional Aviation Safety Officer (RASO).

Aircraft Inspectors have a responsibility to provide follow-up information for the corrective actions on maintenance related SAFECOMs, when requested by the RASO.

Training and a program overview are available on the website for users and managers. http://www.safecom.gov/

4-3 Automated Flight Following (AFF)

Automated Flight Following (AFF) is a system utilizing GPS and satellite communications to report aircraft locations. Locations are reported every two minutes to dispatch offices. This allows dispatch personnel to monitor an aircraft's position on a map for safety purposes. All government and contract aircraft are required to be equipped with an AFF system except for contracted aircraft flying only point-to-point missions.

Prior to aircraft approval, Aircraft Inspectors are required to log into AFF and verify the aircraft are actively reporting in AFF at the contractually required interval (i.e., every two minutes).

For more information, training materials, or to access AFF, go to https://www.aff.gov. A username and password are required to log in.

4-4 AvCheck

AvCheck is an online system and central database used to perform and track inspections on Forest Service contracted and cooperator aircraft and fuel service vehicles and for return to contract availability. The system is accessible from a computer or smart device, such as an iPad.

Access to the system is limited to aircraft and pilot inspectors and aircraft coordinators. To obtain access contact the Airworthiness Branch.

4-5 PRISM

PRISM is currently being used by the WCF program. PRISM is a web-based program adopted by the Forest Service for implementing a Safety Management System (SMS). Each WCF maintenance manager has been assigned 12 electronic checklists as an Internal Evaluation Program (IEP). The checklists are accomplished over a two-year period at which time they are reassessed for continuous safety assurance and safety promotion by way of audits.

4-6 FAA Orders

FAA Orders are handbooks that provide FAA Inspectors with written policy and procedures for fulfilling their responsibilities. These Orders are available electronically at the FAA's website. See Appendix D for a list of current orders useful to inspectors.

4-7 Other References

There are many publications that inspectors must reference on a regular basis besides FSH 5709.16 and 14 CFR. See Appendices for references.

The Forest Service maintains a membership with RTCA, formerly the Radio Technical Commission for Aeronautics which develops aviation standards and guidance for all aspects of aviation. Contact the Avionics Program Manager to establish an individual account.

Chapter 5 – Working Capital Fund (WCF) Aircraft Maintenance

5-1 Introduction

This section provides processes and procedures that establish standards for USFS maintenance, inspection, and airworthiness of Working Capital Fund (WCF) aircraft. This section is also intended to provide direction to inspection and maintenance personnel in the maintenance management of USFS-owned aircraft.

The basis for this section is Federal Management Regulation 41 CFR 103-22; Federal Aviation Regulations 14 CFR 43, 65, 91, 135, and 145; and industry best practices. The foundation for this section has also incorporated the International Standard for Business Aviation Operations (IS-BAO) and requirements from the Interagency Committee for Aviation Policy (ICAP), FSM 5700, and FSH 5709.16.

FMR 41 CFR 102-33, Management of Government Aircraft, establishes requirements Executive Branch agencies must meet in the management of their aviation programs. This regulation does not supersede 14 CFR requirements but is equally applicable to USFS aviation. The FMR is to the General Services Administration (GSA) ICAP as 14 CFR is to the FAA. See Appendix C for website.

FMR 102-33.155 (c) requires agencies to write, publish, implement, and comply with detailed, agency-specific standards which establish or require (contractually, where applicable) policies and procedures for maintenance of government aircraft. This requirement is met by the USFS through FSM 5700, FSH 5609.16, and through the Aircraft Inspectors Guide, Regional Maintenance Procedures Guide (MPG), and the Special Mission Airworthiness Assurance Guide.

Each Region that maintains WCF aircraft shall develop a Regional MPG based on the minimum standards and process requirements of Forest Service policy, the Aircraft Inspector Guide (AIG), and MPG Template available from the Airworthiness Branch.

5-2 Forest Service Aircraft

5-2-1 Federal Aircraft

FMR 102-33 defines Federal Aircraft as aircraft that an executive agency owns (holds title to) or borrows for any length of time.

5-2-2 Public Aircraft

The definition of public aircraft can be found in 14 CFR Part 1, Definitions and Abbreviations; Advisory Circular 00-1.1, Public Aircraft Operations. Essentially, this publication states that when an aircraft (owned or contracted by the Federal

government) is operating in inherently governmental operations, these aircraft are performing public aircraft operations. Regardless of "public aircraft operations," Forest Service policy is to maintain all WCF aircraft in accordance with all applicable 14 CFR requirements, FSM, FSH, AIG, and Regional MPG.

5-2-3 USFS (WCF) Aircraft

WCF aircraft are "owned" by the Washington Office and registered to the WO with the FAA. The WO is responsible for registration renewals, inspection program approvals, ELT registrations, etc. However, the WO does not manage the day-to-day operations/maintenance of these aircraft; the Regions where the aircraft are assigned are responsible for performing these functions.

The WCF Aircraft User Guide shall be followed to manage WCF aircraft. The following paragraphs explain some common terms related to the financial management of WCF aircraft.

Fixed Operating Rate (FOR). (This is pronounced "F-O-R.") In industry, the terms "overhead costs" or "indirect costs" identify costs associated with running a business, but which produce no income. These "indirect" costs may include aircraft depreciation, insurance, hangars, crew and office personnel salaries, utilities, etc. For WCF aircraft these are called FOR. These costs are present every day of the year regardless of whether the aircraft is flown. Regions must provide the FOR costs for each aircraft operated in their annual budgets and any local aircraft operating under national budgets. The WCF Aircraft User Guide can assist in the calculations of FOR.

Use Rate. In industry, "direct costs" or "flight rate" are those expenditures that are directly related to the production of income. They may include mechanic and pilot salaries, fuel, maintenance costs, engine reserves, etc. Because these are directly related to income, in industry they are called "direct" costs. The term Use Rate (sometimes called Hourly Rate) is used for WCF aircraft. This rate is basically what it costs to operate an aircraft for an hour. These costs are accrued only when an aircraft is operated. When an aircraft is flown, there is a charge that must be made to pay for the use of the aircraft. This charge is at that aircraft's Use Rate and against a specific Job Code, be it the WCF Job Code or a Fire "P" Code.

Differences in FOR and Use Rate between Regions are due in part to unique costs of hangars, local factors in the cost of contracted maintenance, and other regional differences.

5-2-4 Federal Excess Personal Property Program (FEPP)

FEPP aircraft refers to aircraft obtained by state forestry agencies through the Federal Excess Personal Property (FEPP) Program. This program allows the US Forest Service to loan out federal property, including aircraft, to state forestry agencies for wildland

firefighting purposes. These aircraft are operated by USFS Cooperators and must be inspected to the NWCG Standards for Interagency Cooperator Type 2 and 3 Helicopters or the current call-when-needed contract standards for other aircraft types.

5-3 Aircraft Inspection and Maintenance Program

5-3-1 Aircraft Maintenance Program Manager / Aviation Safety Inspector (Airworthiness) WCF Program Responsibilities

Inspectors are responsible for providing oversight of the inspection programs, maintenance, and airworthiness of the WCF aircraft assigned to their Region. They must provide oversight of aircraft maintenance being performed by contract maintenance to ensure compliance with standards and policy.

Inspectors are responsible for the maintenance and inspection status of assigned aircraft at all times. An aircraft may operate outside its assigned Region; this does not relieve the inspector of the responsibility of tracking the status of this aircraft or ensuring maintenance standards are followed when contract maintenance is utilized. Inspectors shall ensure pilots periodically provide updates on the flight hours, cycles, landings, and maintenance status when they are away from their main base. The Region to which the aircraft is assigned is always responsible for the aircraft unless otherwise delegated in accordance with delegation policies, see FSH 5709.16 Ch 40. Do not assume the inspector in the Region in which the aircraft is operating is monitoring the aircraft.

5-3-2 WCF Aircraft Inspection Program

WCF Aircraft Inspection Programs shall be maintained in accordance with OEM's most recent revision of the inspection program applicable to the serial number of aircraft being inspected or an inspection program approved by the Branch Chief, Airworthiness. For non-certificated aircraft, the Airworthiness Branch will approve inspection programs. The list of approved inspection programs is kept by the WO and will be published in the Special Mission Airworthiness Assurance Guide. Aircraft of the same make and model will have the same inspection program regardless of regional assignments.

Aircraft Inspection Programs shall include the requirements of FSH 5709.16 Chapter 40 and AIG, Chapter 5.

5-3-3 WCF Aircraft Maintenance

WCF aircraft with airworthiness certificates will be maintained in accordance with their type certificates and their properly altered condition. WCF aircraft without airworthiness certificates will be maintained in accordance with the Airworthiness Branch approved inspection and maintenance program. Forest Service policy is to

inspect and maintain all WCF aircraft in accordance with all applicable 14 CFR requirements, FSM, FSH, AIG, and Regional MPG.

5-3-4 Maintenance Records and Reporting

Aircraft Maintenance Log (FS-5700E). Each WCF aircraft will carry an FS-5700E, Aircraft Maintenance Log (see AIG, Chapter 10) for recording flight hours, time in service, discrepancies, and current inspection schedule status. The FS-5700E is the provision for the aircraft's maintenance record on board the aircraft and is part of the permanent maintenance record. White pages of the FS-5700E shall be removed from the aircraft and sent to the Regional Maintenance Program Manager no later than every 14 days or upon the accumulation of 40 flight hours. This may be done electronically. All discrepancies noted in the FS-5700E will be corrected prior to flight or properly deferred in accordance with 14 CFR 91.213.

Aircraft Inspection / Life Limited Status. A listing of the current status of ADs, S/Bs, ICAs, life-limited parts, and inspection status will be maintained for each aircraft. As aircraft are quite often away from their home station, a copy of these and the current status of the aircraft shall be readily available. A current updated copy (electronic or paper) must be available following every inspection and whenever significant changes have been made. Electronic tracking systems such as Excel, Pentagon 2000SQL, CAMP or others will be used for tracking aircraft requirements by flight hours, cycles, and/or calendar times following 14 CFR and OEM requirements.

Maintenance Records. All aircraft maintenance records shall comply with 14 CFR 91.417. Permanent records shall be kept in a secure location with limited access in the Region's maintenance facility or aviation office and shall not be placed on the aircraft except for flights to a location for maintenance. Records of inspections, discrepancy lists, and other documents such as shop work orders will be maintained at the assigned base for a minimum of 24 months, or until the work is repeated or superseded.

5-3-5 Malfunction and Defect Reporting

Inspectors will report all significant maintenance defects and/or malfunctions that might affect similar aircraft operated by the Forest Service. Inspectors will report these issues to the Airworthiness Branch Chief and to the FAA on FAA Form 8010-4 (Malfunction or Defect Report). Inspectors will use the Forest Service SAFECOM reporting system for discrepancies meeting SAFECOM reporting requirements. See AIG, Chapter 4 for information on SAFECOMs and how to submit them. Each Region shall keep a list of common or repeat maintenance issues for trend monitoring and vendor accountability.

5-3-6 Return to Service

All USFS WCF aircraft will be approved for return to service by an authorized USFS Aviation Safety Inspector. This includes review of work performed by contracted maintenance. Never approve WCF aircraft for return to service unless they are in compliance with their type certificate and/or standards for replacement times of life-limited parts and overhaul frequencies.

5-3-7 Minimum Equipment List (MEL)

WCF aircraft shall not be operated with inoperative equipment, unless it has an approved minimum equipment list (either deferred or cleared) before the aircraft can be released for further flight.

5-3-8 Special Flight Permit

The Airworthiness Branch will be notified whenever a Special Flight Permit is needed. Certificated aircraft needing a Special Flight Permit will request it from the local FAA Flight Standards District Office (FSDO) where the aircraft is located.

5-4 Configuration Control

Inspectors are required to ensure that WCF aircraft configurations are maintained in accordance with the standard configuration approved by the Airworthiness Branch Chief. Configuration changes shall be approved in writing by the Airworthiness Branch Chief prior to implementation.

5-5 Weight and Balance

Weight and Balance forms shall include a Weighing Record and Equipment List. For aircraft with changing roles and/or missions, an Equipment Change Record must be provided and used. A suggested format is one commonly used by the military: “Chart A - Equipment List, Chart B - Weighing Record, and Chart C - Equipment Change Record.” Ensure all loose items in the aircraft are accounted for by weight and location. Aircraft shall be weighed in accordance with FSH 5709.16, Chapter 40 schedule.

5-6 Required Inspection Items (RII)

Each make and model of aircraft in the WCF fleet will have an Airworthiness Branch approved Required Inspection Item (RII) list. When maintenance or inspection requires removal and installation or rigging and adjustment of items identified on the RII list, a second qualified person will ensure that the installation and/or rigging is accomplished in accordance with maintenance instructions and is safe for flight. Provisions for completing RII shall be included in the Regional MPG. Inspectors performing RII shall be identified by the Regional Maintenance Program Manager. The RII inspection is

required to be performed by contract maintenance in accordance with the Regional MPG. Alternate methods of compliance for the RII program must be incorporated in the MPG and be acceptable to the Airworthiness Branch Chief.

5-7 Technical and Regulatory Library

Inspectors must maintain a current aviation technical and FAA Regulatory library for the aircraft being operated or maintained by the Region. Access to tech data libraries maintained by the Airworthiness Branch or another Region meets this requirement. Duplication of subscription services should be avoided. Once implemented, see the Regional Maintenance Procedures Guide (MPG) for further direction on technical and regulatory information.

5-8 Maintenance Procedures Guide (MPG) Standards and Format

The MPG addresses in detail the procedures to meet standards established by policy and the AIG. Each region's MPG is tailored to meet the unique facilities, aircraft types, and operational requirements of the region. A Regional MPG is developed using a template provided by the WO which outlines the minimum scope, standards, and contents. The Regional MPG may be expanded to meet the needs of the region but may not be less restrictive or contain standards contrary to those established in policy and this chapter. Each Region's MPG shall be submitted to the Airworthiness Branch for acceptance.

In addition to addressing specific processes and procedures for accomplishing paragraphs 5-3 through 5-7 of this chapter, the MPG provides information and guidance for the following items:

1. International Standard for Business Aircraft Operations (IS-BAO) Cross Reference

2. **Organization and Personnel.** Duties or responsibilities not listed in FSM, FSH, or the official Position Description are included for all positions. The section also covers continuity of responsibilities when key positions are not covered.

3. **Facilities.** Description of Regional facilities specific to aviation maintenance, to include hangars, offices, parts, ramp spaces and housekeeping.

4. **Maintenance Training.** This section identifies fleet aircraft maintenance support training required for the Regional Maintenance Program. Regions will provide new employee indoctrination and towing, hazmat, engine run, taxi qualification, aircraft-specific, and other region-specific training.

5. **Record Keeping.** This section details the management of aircraft records and associated tracking databases.

6. **Aircraft Maintenance and Inspection Procedures.** This section contains detailed processes and procedures for accomplishing the approved inspection program and maintenance of assigned aircraft. It addresses how discrepancies are corrected or deferred, maintenance away from station is performed and monitored, parts and materials are managed, as well as the RII procedures.

7. **Fatigue Management Program.** This section establishes procedures for ensuring that each Region implements a program to manage fatigue which is an issue across all segments of aviation.

8. **Environmental Management.** This section establishes the needed procedures to ensure compliance with all national and local environmental laws and requirements affecting the maintenance program.

9. **Occupational Health and Safety.** This section establishes the needed procedures to ensure compliance with, all national and local occupational health and safety laws and requirements affecting the maintenance program.

10. **Security and Emergency Procedures.** This section establishes the needed procedures for facility security and the local Emergency Response Plan will be activated in the case of an accident or as otherwise appropriate.

11. **Forms.** Region-specific forms are identified in the MPG, along with direction on how to complete each form and the disposition and/or filing of the form.

Chapter 6 – Contracts

6-1 Introduction

This chapter provides a general overview of the potential contracting issues encountered by inspectors. Inspectors deal extensively with contractors; therefore, it is essential that the pertinent terms and conditions of government contracts are understood.

An aircraft shall not be inspected or approved unless it has been listed in an awarded procurement document and a request for inspection has been made by the Contracting Officer (CO) or their representative. There must not be a contradiction between the contract and Forest Service policy. If one is found, contact the CO and/or COR and inform them of the contradiction with policy for appropriate resolution. This may be in the form of contract modification, master spec change, etc. Contracting Officers and/or Aircraft Inspectors cannot authorize deviations from policy.

Aircraft being inspected may have multiple contracts associated with the same aircraft. For instance, a Type 3 aircraft might be inspected for the Lolo National Forest (Region 1) under an Exclusive Use (EU) contract while that same aircraft could be under additional Call-When-Needed (CWN) contracts. The contracts could be with other Regions, or through the Department of Interior's Office of Aviation Services (OAS). To avoid duplication of effort by another inspector, the aircraft should be inspected against all applicable contracts through a page-by-page review of each contract. The initial inspector may be the only one looking over the aircraft for compliance with the contract(s). Upon completion of the inspection, the inspection results should be forwarded to the appropriate Regional ASI, National ASI, and/or Department of Interior (DOI) Inspector.

6-2 Types of Contracts

Multiple types of contracts may be encountered when procuring aircraft. They are: Multiple Award Task Order Contract (MATOC), Blanket Purchase Agreements (BPA), Office of Aviation Services (OAS) Aircraft Rental Agreements (ARA), and Basic Ordering Agreements (BOA). MATOC awarded aircraft are call when needed (CWN) with Task Order Request for Proposal (TORP) used for their exclusive use to the contracting agency.

6-2-1 Exclusive Use

Exclusive Use (EU) contracts are usually for a set Mandatory Availability Period (MAP), specified in the Task Order, when it is expected that the support of an aircraft will be needed daily. The contractor agrees that the government will have exclusive use of the

equipment for the MAP. Because the Agency has exclusive use of the aircraft, the operator is guaranteed revenue for the length of the MAP.

6-2-2 Call-When-Needed

Call-When-Needed (CWN) contracts allow contractors to supply aircraft at their convenience when requested by the Government. The government typically pays a higher availability rate for CWN aircraft than for EU aircraft because there is no guarantee when or for how long an aircraft may be utilized.

6-2-3 Agreements

Blanket Purchase Agreements (BPAs), Aircraft Rental Agreements (ARAs), and Basic Ordering Agreements (BOAs) are open-ended agreements with vendors to supply aircraft and/or other services. They are like CWN contracts in that the vendor has no obligation to supply aircraft or services when requested, except there is no guaranteed minimum order. Aircraft or services are offered at the vendor's convenience. While some specific details can be found in the language of these agreements, they are for the most part written in a general nature. At a minimum, these aircraft or services must comply with applicable Forest Service policy, Federal Aviation Regulations, and if used for special missions, with applicable interagency fire and avionics standards.

Forest Service inspectors work closely with OAS inspectors. While the requirements in OAS's Aircraft Rental Agreement are similar to those in most Forest Service contracts/agreements, there are differences. Inspectors should contact OAS to obtain a copy of their Aircraft Rental Agreement.

6-3 Contract Roles

6-3-1 Airworthiness and Avionics Inspectors

The Inspector's authority to inspect, approve and return aircraft to availability is through 5700 policy and not through the contract. Contracts implement policy, they do not create new policy. Inspectors have limited authority on any contract and must coordinate with Contracting Officers and their representatives when providing oversight for contracted aircraft. The only time inspectors may act without the pre-approval of the CO is when a question of safety or airworthiness arises. If forced into this situation, at the earliest opportunity notify the CO. See AIG, Chapter 11 for a discussion on removing aircraft cards.

Remember: The government is the customer.

Inspectors represent the government. Some vendors may feel it is their right to supply aircraft or equipment on their terms. Do not be intimidated by this mindset. If the vendor is not willing to supply aircraft in accordance with the contract, they may be

found in non-compliance, made unavailable, and/or the contract can be terminated. If an uncooperative vendor is encountered, do not get into an argument; instead, contact the CO immediately to resolve any issues. Written or electronic correspondence should always follow initial phone conversations with the CO. Keeping the CO informed and documenting correspondence in the inspector's records will ensure accurate information and may be used in later litigation.

6-3-2 Contracting Officer (CO)

The CO is the first and final authority regarding contract administration. . Contact the CO if you have any questions.

6-3-3 Contracting Officer's Representative (COR)

CORs are delegated in writing by the CO with the authority to represent them in fulfilling the requirements of the contract. CORs are limited to ensuring that all contract clauses are complied with by the contractor and overseeing the day-to-day performance of the contract. CORs may not re-delegate their authority to another individual. All helicopters under contract with the Forest Service will have a manager assigned who acts as COR for the contract. The COR for an airtanker is typically a tanker base manager. For light fixed-wing aircraft (LFW), lead planes, and Aerial Supervision Module (ASM) platforms, there are various individuals who may be assigned as the COR.

COR Limitations. COR authority may not be re-delegated, and does not include the authority to:

1. Make contract modifications.
2. Obligate the government to pay any money.
3. Terminate a contract.

Chapter 7 – Contract Aircraft Standard Requirements

7-1 Introduction

This chapter lists the minimum requirements for contract and cooperator aircraft per FSH 5709.16. Contracts supplement these with additional requirements. Contracts from other agencies, such as a BPA or ARA, may not include Forest Service minimum standards. Inspectors must be familiar with these requirements to ensure all approved aircraft meet policy requirements. Do not inspect an aircraft until thoroughly familiar with the requirements of the applicable procurement document and agency policy. Do not inspect a vendor aircraft unless it has been awarded a contract. Do not approve an aircraft if it does not meet agency policy.

Missions performed by the Forest Service necessitate requirements beyond those required by the FAA in 14 CFR. Reference the Special Mission Airworthiness Assurance Guide (SMAAG). Contractors may want to discuss these additional requirements. Keep in mind that contracts and agreements are with the Forest Service and not the FAA. The Forest Service is the customer.

7-2 General Requirements (FSH 5709.16, 40)

All aircraft furnished under a contract or rental agreement must possess a standard category airworthiness certificate, except for some special mission aircraft which may allow a “restricted” category airworthiness certificate.

In accordance with FSM 5713, the condition and equipment of cooperator aircraft must “provide a level of safety and mission effectiveness comparable to contract aircraft.”

1. Cooperator contracted aircraft must meet the USFS Call-When-Needed aircraft services contract standards applicable to the aircraft type.

2. Cooperator owned aircraft must meet the NWCG Standards for Interagency Cooperator Type 2 and 3 Helicopters (PMS 525) or the applicable Call-When-Needed aircraft services contract if NWCG does not have an applicable standard for the aircraft offered.

The following guidelines also apply to cooperator aircraft:

1. Aircraft horsepower requirements:

    a. Single-engine airplanes used for special missions such as reconnaissance and survey must have a horsepower loading of not more than 13.5 pounds per horsepower. This can be determined by dividing the gross takeoff weight by the engine horsepower. If the result is greater than 13.5, the aircraft does not meet the requirement. (FSH 5709.16, 30)

b. Multi-engine airplanes must be capable of at least 200 horsepower per engine. Any engine developing less than 240 horsepower must be turbo-charged.

c. RAOs may grant an exemption for these horsepower requirements provided the mission does not take place over mountainous terrain (FSH 5709.16, 30).

2. Unless operated with an FAA-approved Minimum Equipment List (MEL), aircraft will not be carded or used if any installed instruments or equipment are inoperative.

3. Aircraft upholstery, paint, and Plexiglass must be in good condition. While certain aircraft manufacturers may provide clear guidance regarding these items, that is not always the case; inspectors must use their best judgment when making determinations of good condition.

4. Aircraft may not be approved if any engine, propeller, rotor, or other component time in service exceeds the manufacturer's recommended Time Between Overhaul (TBO), unless approved under an extension by the FAA.

5. Operational check flights:

a. Must be performed in daylight visual flight rules (VFR) conditions.

b. The aircraft must return to the departure airfield where the pilot shall review the check flight results with maintenance personnel.

c. Maintenance personnel shall make a final check of the work performed before releasing the aircraft.

d. New or overhauled reciprocating engines must accumulate three hours of operating time, including two hours of flight prior to Forest Service use unless stated otherwise on the contract.

e. Always check the procurement document to determine the correct break-in period.

7-3 Equipment (FSH 5709.16, 42.2)

Aircraft type and mission dictate minimum equipment requirements. These minimum standards can be found in FSH 5709.16, 42.2.

Aircraft used for special mission passenger and cargo operations will be equipped in accordance with 14 CFR and with the following minimum equipment:

1. Helicopters carrying passengers shall be equipped with FAA-approved wire strike protection systems.

2. Helicopters carrying passengers shall be equipped with engine inlet air filtration system/particle air separator.

3. An FAA-approved shoulder harness is required for each front seat occupant.

4. A flight meter or recording tachometer displaying actual flight time in hours and tenths.

5. A first aid kit.

For examples of common aircraft and equipment, see the Airworthiness Branch 5700 Shared folder.

7-4 Avionics

See FSH 5709.16, 42.22 for the minimum avionics required for special mission aircraft. These items must remain operational during agency use. They shall not be deferred with the aircraft continuing to operate. See Chapter 8 for common avionics required for special mission aircraft.

7-5 Use of the Term Convenient

The term convenient is used in some contract specifications. It has proven to be an effective and enforceable standard definition when more specific language is not appropriate. A standard definition that can be applied is: Suitable for the purpose, easy to access, and easy to use. This means the stated user must be able to easily reach and use the required equipment while seat belted in their position, and using the system cannot interfere with other users or systems. Connectors installed out of reach or out of view, like under the instrument panel or behind the user's head, are not convenient. Radios installed where the user needs to reach across another user or flight controls not only fail the convenient requirement, but they may also be hazardous to the safe operation of the aircraft. This is why it is important for you to understand the mission that any given aircraft will be asked to perform and develop a perspective for the experience that the user will have when operating the equipment.

7-6 Deferring Inoperative Equipment

Vendors may defer equipment if it is on their approved MEL and not required by the contract or agreement provided, they have informed an ASI. Deferred inoperative equipment in all cases must be corrected at the next required inspection per § 91.405(c) but no longer than 14 consecutive days unless approved by the assigned ASI. Equipment required by a contract may be deferred if it is allowed by that contract and

approved by an agency ASI. Inspectors shall not allow the deferral of equipment below policy minimums, including items that would limit locations that the aircraft could be dispatched to. When deciding to approve a deferral, the inspector must ensure that the mission can be safely accomplished without the equipment. This is done by coordinating with agency users and, if necessary, management personnel for the type of operation (e.g. rappel program manager). This does not prevent contractors from deferring items when they have been released from contract availability. For example, repositioning for maintenance. *Be cautious of users that seem focused on mission accomplishment over the impacts of the inoperative equipment.*

Chapter 8 – Avionics Requirements

8-1 Introduction

Aircraft are a major resource used in firefighting and natural resource missions. Air-to-air and air-to-ground coordination is essential. Without excellent communication between personnel, effective use of resources is not possible. While communications are often a focus, they are combined with systems providing navigation, surveillance, and enhanced capabilities to ensure safe, reliable, and effective operations.

8-2 Providing Guidance

As technology, regulations, and operational requirements change, so do avionics requirements. These changes drive revisions to policy, specifications, and contracts. You must stay apprised of these changes, and their impacts, to provide relevant input and guidance to users and interagency managers.

Avionics issues can be difficult for operators to identify. Certain avionics problems such as modulation, frequency, or sensitivity require evaluation with test equipment. Issues may manifest in a gradual reduction of performance leading to an unconscious acceptance of poor functionality. This can result in operators being unprepared when discrepancies are identified during your inspection. Knowing the equipment and being diplomatic will help prevent conflicts when identifying avionics problems.

Whether you are discussing discrepancies at an inspection, answering questions about contract requirements, briefing leaders, or providing other guidance, you must have a thorough understanding of required avionics, system theory, and their purpose and use in our operations. This chapter provides an overview, but experience and continued training are critical to maintain expertise.

8-3 General Avionics Requirements

Aircraft operated by the Forest Service must meet FAA minimum equipment requirements. While non-certificated agency and cooperator aircraft are excluded from some FAA requirements, they must meet an equivalent standard. Contractor and cooperator passenger aircraft must meet part 135 avionics requirements as well as night and IFR requirements prior to use for those missions.

The Forst Service contracts airplanes for point-to-point flights. These must meet standard FAA part 135 requirements. No additional equipment is required.

Special mission aircraft conduct all other operations. These aircraft have contractually required equipment beyond the FAA minimums which vary by mission type. Special mission aircraft include aircraft of all types and categories. These range from small

reconnaissance aircraft to very large airtankers and include all sizes in-between. All have different avionics requirements depending on their role in operations.

Avionics complexity increases as the complexity of the mission increases. Non-fire airplanes generally have fewer requirements. As missions progress to fire operations, smokejumper, rappel, airtanker, and aerial supervision, the requirements become increasingly complex. Individual task orders may increase requirements for reasons such as geographical needs. The contract or agreement specific to the aircraft outlines the minimum requirements.

8-4 Avionics Systems, Purpose, and Background

This section describes avionics common in our operations, their purpose, how they are utilized, and in some cases the background behind the requirement.

8-4-1 VHF-AM Radios (AMs, Comms, Victors)

AM Radios are used by all aircraft to talk to FAA Air Traffic Control. Our operators also use them for air-to-air communications, TFR control and access, airtanker base and heli-base ground operations, and for monitoring uncontrolled airspace and airports and unrelated TFRs near ongoing operations. Frequencies must be approved prior to use. *122.925 MHz* is an exception available to all natural resource agencies on a non-interference basis. This frequency should be used for testing.

Standby Monitoring: Standby monitoring allows users to listen to audio from the frequency set in the radio's standby position while still monitoring and providing priority to the active frequency.

8-4-2 VHF-FM Radios (FMs, Tactical)

FM radios are uncommon in civil aviation, but they are the backbone of Forest Service and Interagency communications. They are primarily used in aviation for air-to-ground communications. Air-to-air use is also common in California where AM frequency availability is limited. Ground personnel use FM radios for their primary communications including field logistics and tactical operations.

Repeaters: FM radios can be used in duplex mode with different frequencies for transmit and receive. This enables the use of mountain-top repeaters which retransmit radio calls from a user to another user that would not normally have line-of-sight (i.e. on the other side of the mountain.) The same concept can be used to extend the range of less powerful radios. This makes them ideal for ground users. Airborne users will often contact ground users through these repeater systems.

National Air Guard (168.6250, Tx tone: 110.9): Air Guard is used for emergency aviation communications. Continuous monitoring is mandatory by dispatch and all

aircraft assigned to an incident. Scanning cannot be used to meet this requirement. Air Guard is required in the last channel of all ground fire radios. National Air Guard is authorized for:

- Emergency air-to-air initial communications
- Emergency ground-to-air communications
- Initial call, recall, and redirection of aircraft when no other frequency is available

National Flight Following (168.6500, Rx & Tx tones: 110.9): This is used for flight following of aircraft flying point-to-point. Dispatch centers with access always monitor this frequency. National Flight Following is authorized for:

- Flight following, dispatch, and/or re-direction of aircraft
- Air-to-Ground and Ground-to-Air administrative traffic

Government Common Use (163.1000 & 168.3500): These frequencies are used on a non-interference basis and are not exclusive to any user. They are not to be used for airborne operations and are prohibited by DOI and USDA from use during operations involving the protection of life and property. *168.3500 MHz* is commonly used for testing.

8-4-3 Aux FM

Vendors often have questions regarding the necessity for the Aux FM requirement. The Aux FM allows handheld radios to be operated through the aircraft audio system. This is used to provide additional radio capacity and as a quick method to enable users to have access to their local frequencies without reprogramming. It is not a replacement for an aeronautical radio. An additional aeronautical VHF-FM radio can be used in lieu of the Aux FM. An aeronautical FM used solely to replace the Aux FM does not need a guard receiver.

8-4-4 PA Systems

Internal PA systems are used to pass important information to smokejumpers and rappelers in flight. They must be easily understood throughout the cabin. External PA systems have no requirement for audio clarity. They are used to alert ground personnel which is mainly done with the siren, although voice is required and may be used when conditions permit. You may be asked why voice doesn't need to be intelligible below the helicopter. Historically, the size of amplifiers and speaker arrays needed for clear voice below helicopters has required an unacceptable reduction in payload, and the siren has proven effective.

8-4-5 Audio Systems

Audio requirements vary more than any other system based on the needs of the aircraft and the mission. You must have a thorough understanding of the requirements and their impact on users.

Individual Volume Controls: These are generally required for aerial supervision aircraft. Users have multiple receivers selected at once. They are actively listening to some radios while listening for callouts on others that may require their attention. Individual volume controls allow users to set each radio to different levels to aid in differentiating between radio calls. For example, an air attack may be listening to air-to-ground to determine tactical needs and air-to-air while coordinating aircraft to meet those needs with both radios at relatively high volumes. They may also have radios monitoring air guard, local traffic, and a TFR set at lower volumes. This allows them to quickly identify when they need to switch their attention to a less frequently used but high priority channel.

Receive Audio Indicators: This is another system to assist users with identifying active radios. During times of high use, the source of calls from multiple radios in quick succession may be difficult to identify, especially if they come from radios with volumes set relatively close. This system lights an indicator for each radio while the audio line for that radio is active. This may cause indications for active radios not selected on the audio controller and transmitting radios depending on the installed system and configuration.

8-4-6 Navigation Systems

GPS is the primary navigation system for interagency aircraft. Portable aviation units may be used for some low complexity missions. IFR and high-performance aircraft generally require VOR and ILS as a supplement to GPS. These are used during long distance and IFR flights and when GPS is not available for navigation or landing. This could be due to a lack of approved procedures in the area or system unavailability due to failure, jamming, or spoofing. As the FAA transitions to performance-based navigation, some ground stations are being decommissioned. The FAA will continue to maintain a Minimum Operational Network to allow VOR, VORTAC, and ILS use throughout the nation as a backup to GPS.

8-4-7 ELTs

The purpose of the ELT requirement is to give aircraft occupants the best chance of survival possible after a crash in remote or unknown locations. ELTs are required for all Forest Service and Interagency aircraft even though the FAA excludes helicopters and aircraft dispensing substances for agricultural purposes (firefighting) from the regulation.

Several conditions prevent ELTs from operating effectively. Many have been seen on vendor aircraft which may generate discussions. Current specifications address these issues because of previous failures. They include:

- Fabric and Velcro straps: These have been shown to stretch during a crash and permit the ELT to exit the mount.
- Old installation locations: These may not meet current deflection requirements and absorb impacts preventing activation.
- Helicopters with single axis G-switches: These may crash in directions not associated with forward flight preventing activation.
- ELT antennas installed inside the aircraft cabin or other enclosed areas: These prevent the signal from reaching satellites or searchers.

8-4-8 AFF, ATU, and OLMS

AFF is used by dispatchers to track aircraft locations. It removes the requirement for periodic radio check-ins.

ATU systems transmit information on water and retardant drops through the AFF system.

Operational Loads Monitoring Systems (OLMS) record aircraft parameters during special missions to establish flight profiles and the impact on aircraft structure. OLM requirements include parameters required for the ATU, and both can be met using the same unit.

8-4-9 Transponder and Altimetry Requirements

We operate VFR aircraft in areas where the FAA does not require transponders. Vendors frequently asked why they need transponders or why static systems need to meet IFR certification requirements. There are two main reasons. First, these systems provide the aircraft altitude and location to other aircraft operating in the area. It is critical that the position reported is accurate, including altitude. Second, we may be required to fly in controlled airspace without notice and for extended periods of time.

Airtankers require diversity transponders (top and bottom antennas.) This is due to near misses during operations resulting from large aircraft shadowing bottom antennas from aircraft flying above them.

8-4-10 ADS-B

ADS-B Out is required for the same reason transponders are. We may need to operate in controlled airspace which requires its use. ADS-B In is used by aerial supervision for traffic management. Users can see IDs for firefighting aircraft on mobile apps, e.g. Foreflight. ADS-B In traffic can supplement TAS but cannot be used on its own for traffic awareness. ADS-B is not required in a large portion of the country for aircraft that stay below 10,000 feet. The inability to detect transponder equipped aircraft which are not equipped with ADS-B creates a hazardous situation for users in our operations. ADS-B also cannot be used to meet satellite weather datalink requirements. The lack of coverage on the ground and in mountainous terrain makes it unreliable in areas we operate.

8-4-11 Traffic Systems

TCAS and TCAS II are versions of TAS. They may be used to meet the requirement but provide no benefit beyond TAS for our operations. TAS requirements for our missions are a direct result of mid-air collisions of firefighting aircraft. They are not theoretical or arbitrary. The criteria have been coordinated with industry and thoroughly vetted by agency personnel. Discussions regarding the TAS requirement are common and often relate to the display requirement or the misconception that standard TCAS installations should supersede our requirements. Our requirements were developed specifically to mitigate limitations of standard installations for TAS, TCAS, and TCAS II in our operating environments.

Display Range: You may receive questions regarding the display range requirements. *All installations except ASM require a display range selection of 2 nautical miles or less.* The inner ring on a higher setting does not meet this requirement. This is due to dense traffic in the operating environment. On settings over 2nm, traffic symbols are larger than the area of concern. The system will overlay aircraft on top of each other making large blobs rather than discernable aircraft. The resolution at 2nm provides sufficient separation of symbology which allows users to identify individual aircraft locations, altitudes, and headings. *ASM aircraft require a 1nm display* due to the proximity of airtankers in their mission. For large format displays, higher ranges are acceptable if the required range is displayed in an area with the size dependent on the 1nm or 2nm requirement. These sizes have been evaluated to ensure separation is acceptable. Small displays providing lower ranges, such as 1nm, are acceptable. This is allowed because TSO requirements require manufacturers to show that the display is usable and performs the intended function at all designed ranges. They use higher resolutions and other display factors to ensure usability.

8-4-12 Airborne Weather Systems

Weather Radar and Lightning/Thunderstorm Detection are active systems which provide a real-time display of nearby weather. They are suitable for making immediate decisions, i.e. tactical use. See 14 CFR part 135 for requirements.

Datalink systems such as ADS-B In and Satellite Weather use the ground based National Weather Service for source information. This data is delayed, which can be misleading to users. An age is often displayed which corresponds to the time the unit in the aircraft received the data, not the age of the weather data itself. Weather data is always older than the displayed age and can exceed the indication by 20 minutes. Datalink weather is intended for planning purposes, i.e. strategic use.

8-4-13 Helicopter Connectors

Helicopter connectors may be tested with test plugs fabricated in accordance with FS/OAS A-18 or a multimeter. Bucket connectors on helicopters not approved for Torch operations may be checked by connecting a bucket or remote hook and performing a function check. Function checks are not acceptable for Torch approved helicopters.

Auxiliary Power (3-Pin): These supply aircraft power for portable equipment such as infrared cameras and Plastic Sphere Dispensers (PSD). See FS/OAS A-16 for details. The Forest Service no longer requires 3-pin aux power on airplanes. 14 VDC options on the drawing are not applicable to our requirements.

Bucket/Torch Connector: These provide power and control of buckets, remote hooks, and torches. Aircraft connectors must not be household or hospital type connectors; however, vendors may use plug in adapters from an approved connector on the aircraft to a household or hospital type connector at the bucket or long line. These are part of the external equipment.

The connector in helicopters with an ATU must be configured to provide a ground to the ATU to indicate a bucket is installed without any action other than installing a bucket. Using switches or other secondary action is not acceptable.

Helicopters approved for Torch operations and all Type 3 helicopters must use a 9-pin connector wired to a 50 Amp circuit. See FS/OAS A-16 for details. If equipped with an ATU, pin G shown in the drawing is an example. The ATU ground may be any pin other than D or E. Correct polarity must be verified for these connectors. 50-amp circuit breakers are not always located in an obvious or easily accessible area. Do not spend excessive time searching for it. It is the vendor’s responsibility to locate this on their aircraft.

8-4-14 Portable Electronic Device (PED) Tolerance

Many of our users rely on portable devices in flight. When these are required for the mission, it is imperative that they can be used in all flight profiles, including critical phases of flight. FAA guidance allows multiple ways for operators to determine if PED use is acceptable; however, methods not using an STC require limitations on PED use. An STC is the only acceptable method to ensure our users can operate PEDs during all phases of flight.

EFB Approval: FAA approval of PED use for EFBs in critical phases of flight does not meet this requirement. These use a different standard which evaluates specific PEDs located in predetermined locations in the cockpit.

For aircraft not contractually requiring tolerance, PEDs may be used without an STC provided the operator has evaluated the aircraft and determined that they will not cause interference. For part 135 operators, the certificate holder (i.e. the company) must make this decision, not the pilot. In these cases, PEDs may not be used in critical phases of flight, and the operator or pilot may deny PED use at any time. It is the responsibility of the user to verify PED use is acceptable on these flights, and they cannot insist on PED use.

8-5 Avionics Specifications

See FS/OAS documents and applicable contracts and agreements for avionics specifications. The items listed below highlight common requirements and areas of concern.

8-5-1 Radio Communications

AM Radios must be TSO approved and transmit at least 5 Watts. FM Radios must be listed on the National Interagency Incident Communications Division's approved radio list for the appropriate user and transmit 10 Watts (6 Watts for multiband) with a 1-Watt low power selection. FM Radios must be programmable from the front panel in flight without the use of a computer. Each required VHF-FM radio must include two receivers to allow simultaneous monitoring of main and guard channels. The National Air Guard channel is normally only monitored in one radio. Guard receivers in other radios are used to provide additional capabilities as selected by the user.

All radios must receive a 5-Watt transmission from a range of 50 nautical miles. This is an industry standard for radio system design. While most functioning radios can easily achieve this, changing squelch settings to meet our interference requirements can reduce effective range below this threshold.

Transmit interlock functions are not allowed on fire aircraft approved for passengers or requiring two pilots. For these aircraft, all radios must receive a 5-Watt transmission

from a range of 24nm while any other radio on the aircraft is transmitting. This is to ensure critical radio calls are not missed during operations. Initial calls from aircraft approaching the Fire Traffic Area (FTA) are required at 12nm from the center of the FTA. A 24nm range ensures aircraft on the far side of the FTA can hear incoming calls. FS/OAS A-30 provides test procedures to simulate effective ranges.

Aircraft using multiple frequencies spaced closely together will experience interference due to the limitations inherent to RF propagation. To account for this, minimum spacings have been established to ensure reliable communications. Transmitting on any radio must not break squelch on any other radio with a frequency spacing of 1 MHz. *1 MHz is the minimum spacing for reliable single radio use.* Transmitting on any radio must not reduce the range of any other radio below the 24nm requirement with a frequency spacing of 2 MHz. *2 MHz is the minimum spacing for the reliable use of multiple radios*, i.e. someone listening to one radio while another user is transmitting on a second radio. If you receive operational complaints of continued interference on an incident with closely spaced frequencies, you should recommend operations request a new frequency with greater spacing.

8-5-2 Audio

All audio systems share common traits. They must provide clear communication using general aviation headsets. Military low-impedance systems are not allowed. Required positions must have ICS and the ability to hear radios selected by a specified user. Sidetone is required for all radios and ICS. Restricted aircraft must provide ICS and audio control for agency pilot inspectors, even though these positions are not used in normal operations. Non-pilots may not touch flight controls. This drives the requirement for SIC positions to have another means to key radios and ICS such as drop cords, foot switches, or panel mounted switches.

Audio controllers must provide receiver selection (on/off) for each radio. Controls on the radios do not meet this requirement.

When a transmitter is selected, that radio's receive audio must be provided to the user, even if deselected. This is a requirement for safe airspace that prevents users from unknowingly transmitting while other aircraft are transmitting on the same frequency. Multiple transmitters garble the signal for all users making calls unintelligible.

8-5-3 Electrical Wiring Interconnection System (EWIS)

EWIS describes the aircraft wiring and all its associated devices as an aircraft system. It includes any wire, electrical cable, wiring device, or combination of these, including termination devices, installed in any area of the aircraft for the purpose of transmitting electrical energy, including data and signals. See 14 CFR 25.1701 for examples of included items.

EWIS is a common source of problems, especially on older aircraft and aircraft with extensive modifications. Several accidents involving electrical fires on aging airliners led to the concept of treating aircraft wiring as a system. Improper installations, maintenance, and inspections as well as degraded materials and contamination all contribute to failures.

Part 25 has EWIS design and inspection requirements for transport airplanes that are not specifically identified for other aircraft. It is important to remember that all aircraft have an electrical wiring interconnection system, regardless of type, and they must be properly maintained. The part 25 requirements are based on established industry standards which apply to all aircraft.

Our contracts and agreements require that aircraft meet AC 43.13-1B Chapter 11 for aircraft electrical systems. Pay particular attention to wiring that may interfere with other systems like aircraft controls. Ensure proper separation and wire support to avoid chafing and potential sources of arcing or ignition. Verify systems like the 50 Amp 9-pin use wires sized appropriately for the required current draw. EWIS is part of each aircraft pre-use inspection and should be inspected collectively.

8-6 Inspection Types

The type of inspection is determined by the AV designation required by the aircraft and held by the inspector. All special mission aircraft should have performance testing completed by an AV3 qualified inspector each year. AV3 qualified inspectors should always complete performance testing and not functional testing. AV2 qualified inspectors may conduct functional testing on appropriately designated aircraft that have previously received performance testing if AV3 inspectors are not available to inspect the aircraft in a follow-on year for the contract or agreement. AV1 qualified inspectors conduct conformity checks on appropriately designated aircraft.

8-6-1 Conformity Checks

Conformity checks are used to verify that required equipment is installed in accordance with 14 CFR part 135 standards. System testing is not performed, and no test equipment is required.

8-6-2 Functional Testing

Functional testing is conducted to ensure previously tested equipment remains operational. It requires basic test equipment allowing checks such as AM and FM radio calls, audio system tests, aux power tests, and bucket connector tests. These often rely on vendor assistance. Radio tests may use handheld radios or other aircraft at least 20 feet away from the test aircraft. Aux FM tests do not require VSWR checks but require verification of mounts and operation through the audio system. Audio checks require

testing standard functions such as transmit and receive selection, receiver enabling for the selected transmitter, volume checks, and general ICS and radio audio quality at all stations. Other systems not requiring test equipment such as ELT, GPS, AFF, etc. must be checked. ADS-B verification is not required unless otherwise warranted. These inspections are typically performed during aircraft pre-use inspections but can be done at any time of the year as requested and due to operational needs.

8-6-3 Performance Testing

Performance testing is conducted to ensure all avionics requirements are met and all systems meet FAA, manufacturer, and contract specifications. Testing requires advanced training and the understanding of system theory. Radio testing requires the use of an approved avionics flight line test set. Radio parameters such as frequency, modulation, deviation, reception, interference, and audio quality must be tested. Navigations systems must be tested for general operation, deviation, bearing, sensitivity, and flagging. ELT transmissions must be tested. ADS-B performance reports must be reviewed. Instruments, lighting, avionics installations, and aircraft wiring must be inspected. All other required avionics must be thoroughly inspected to ensure all aspects meet requirements.

8-7 Test Equipment

You must keep and maintain the equipment necessary to ensure the avionics you are testing meets the required specifications. AV3 inspectors must use an avionics flight line test set approved by the National Avionics Program Manager. Flight line test sets and multimeters must be calibrated in accordance with the manufacturer's recommendations. See the Avionics Inspector Task Book for test equipment required for AV2 and AV3 designations.

Chapter 9 – FAA Operations Specifications (Ops Specs)

9-1 Introduction

Most Forest Service contracted aircraft are required to operate under some form of FAA operating authority, be it Part 133 – Rotorcraft External Load Operations, 135 – Commuter and On-Demand Operations, or 137 – Agricultural Aircraft Operations. Operators approved under Part 135 have developed an Operations Manual that is submitted and approved by the FAA. These essentially tell the FAA how they intend to operate. The FAA will then issue Operations Specifications (Ops Specs) with the specific terms, conditions, and limitations under which the certificate holder must operate. Ops Specs are as legally binding on the operator as 14 CFR. The Ops Specs provide a listing of the aircraft the certificate holder may use, along with any additional requirements mandated by the FAA.

It is essential that inspectors are familiar with the location and type of information that can be found in Ops Specs. Per 14 CFR 135.21(f), operators are required to "carry appropriate parts of the manual on each aircraft when away from the principal base." Also, per 119.43(b), they are required to "insert pertinent excerpts of its operations specifications thereto, in its manual." Finally, Part 133 operators are required to renew their operating authority every two years.

This chapter will provide an overview of the items pertinent to inspector duties found in **Part D – Aircraft Maintenance** and **Part A – General** of the certificate holder's Ops Specs. The FAA signs and issues Ops Specs electronically. Samples are provided in this chapter.

The information provided in this chapter is applicable to most of the vendors used by the Forest Service. A few contractors operate aircraft in the "10 or More Passenger" category. There are additional Ops Specs for these operators which can be found below in 9-14. More detail on Ops Specs can be found in the FAA's DRS system under Order 8900.1, Flight Standards Information Management System.

The examples given below are for reference and familiarization purposes. It is important to remember that the FAA may change regulations and guidance in the interim between revisions of this guide. It is incumbent upon you as the inspector to ensure that current guidance is utilized.

9-2 Table of Contents

The Table of Contents lists pages that should be present in a vendor's Ops Specs. The simplicity of this statement may be questioned, but some valuable information is provided in the Table of Contents. An example of a Table of Contents is provided below. In the example, it can be ascertained from the effective date and amendment

number columns that this operator has at least one aircraft on an Approved Aircraft Inspection Program (AAIP) and at least one has an approved Minimum Equipment List (MEL). On the other hand, if an Ops Spec page shows an Effective Date and Amendment number in the Table of Contents, as in the example below, but Page D104, Additional Maintenance Requirements – Emergency Equipment, is missing from the contractors Ops Specs, the reason why should be questioned.

Figure 9-1: Sample Ops Specs Table of Contents

U.S. Department of Transportation
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TABLE OF CONTENTS

Part D – Aircraft Maintenance

		HQ Control Date	Effective Date	Amendment No.
71	Additional Maintenance Requirements	02/19/99	(Not Used)	
72	Aircraft Maintenance – Continued Airworthiness Maintenance Program Authorization	08/15/97	(Not Used)	
73	Approved Aircraft Inspection Program (AAIP)	02/20/14	09/09/15)	5
74	Reliability Program Authorization: Entire Aircraft	08/15/97	(Not Used)	
75	Reliability Program Authorization: Airframe, Powerplant, Systems or Selected Items	08/15/97	(Not Used)	
76	Short-Term Escalation Authorization	08/15/97	(Not Used)	
77	Maintenance Contractual Arrangement Authorization: For Entire Aircraft	08/15/97	(Not Used)	
78	Maintenance Contractual Arrangement Authorization: For Specific Maintenance	08/15/97	(Not Used)	
79	Reliability Program Contractual Agreement Authorization	08/15/97	(Not Used)	
80	Leased Aircraft Maintenance Program Authorizations: U.S. - Registered Aircraft	08/15/97	(Not Used)	
82	Prorated Time Authorization	08/15/97	(Not Used)	
83	Short-Term Escalation Authorization for Borrowed Parts Subject to Overhaul Requirements	04/01/99	(Not Used)	
84	Special Flight Permit with Continuous Authorization to Conduct Ferry Flights	04/01/98	(Not Used)	
85	Aircraft Listing	02/06/14	04/18/14	13
87	Maintenance Program Authorization for Leased Foreign-Registered Aircraft Operated by U.S. Air Carriers	08/15/97	(Not Used)	
88	Maintenance Time Limitations Authorization	08/15/97	(Not Used)	
89	Maintenance Time Limitations section	08/15/97	(Not Used)	
90	Coordinating Agencies for Suppliers Evaluation (CASE)	08/15/97	(Not Used)	
92	Maintenance Program Authorization for Airplanes Used for Operations in Designated Reduced Vertical Separation Minimum (RVSM) Airspace	08/15/97	(Not Used)	
93	Helicopter Night Vision Goggle Operations (HNVGO) Maintenance Program	02/04/99	(Not Used)	
95	Minimum Equipment List (MEL) Authorization	08/15/13	12/08/15	0
101	Additional Maintenance Requirements – Aircraft Engine, Propeller and Propeller Control (Governor)	08/22/10	12/08/10	5
102	Additional Maintenance Requirements – Rotor	08/22/10	09/15/01	6
103	Additional Maintenance Requirements – Single-Engine IFR	08/22/10	(Not Used)	
104	Additional Maintenance Requirements – Emergency Equipment	08/22/10	09/15/11	2

Print Date: 07/15/2015 OK CORRAL AVIATION, INC. CERTIFCATE NO: WOKA285D

9-3 Approved Aircraft Inspection Program (AAIP) – D073

The D073 will list the aircraft that are approved to be inspected under an AAIP. Be aware that an AAIP is approved for a specific "N" Number/serial number aircraft. An operator may have several of the same type aircraft listed on their D085, but not all "N" numbers may be approved on the AAIP.

See below for an example of a D073.

Figure 9-2: Sample D073 Approved Aircraft Inspection Program (AAIP)

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D073. Approved Aircraft Inspection Program (AAIP) **HQ Control: 02/20/14** **HQ Revision: 00b**

The certificate holder is authorized to use each aircraft listed in the following table for Title 14 CFR Part 135 operations provided each aircraft listed is inspected in accordance with the certificate holder's Approved Aircraft Inspection Program (AAIP).

Registration Number	Serial Number	Aircraft M/M/S	Maintenance Document	Time Limitations Document
N1234S	210-56789	Cessna T210M	Cessna Maintenance Manual C06234	This Operator T210 AAIP
N987CS	421C-1100	Cessna 421C	Cessna Maintenance Manual C08124	This Operator 421C AAIP

1. Issued by the Federal Aviation Administration.
2. These Operations Specifications are approved by the direction of the Administrator.

U.R. Currius

Currius, Uriah R., Principal Maintenance Inspector, NR09

3. Date Approval is Effective: 09/09/2016 Amendment Number: 5
4. I hereby accept and receive the Operations Specifications in this paragraph.

I.M. Kool

Kool, Igor M., Director of Maintenance Date: 09/09/2016

Print Date:09/09/2016 D073-1 CERTIFCATE NO: WOKA285D

OK CORRAL AVIATION, INC.

9-4 Aircraft Listing – D085

This is probably the most important Ops Spec page that needs to be checked. All approved aircraft will be listed on the D085. If the aircraft in question is not listed here, then it cannot be carded. For point-to-point aircraft, this will be the only document that will normally be checked. For Part 133 and 137 Operators, the D085 is the only Maintenance Ops Spec presently being issued. Some Flight Standards District Offices (FSDO) may not be issuing D085s for Part 137 Operations.

An example of a D085, which is similar to the A003, is below.

Note: Page A003 of the contractor Ops Specs will have an Aircraft Listing that looks like the example shown below for the D085. For Part 133 and Part 137 aircraft, there may not be a D085 Aircraft Listing, only an A003. See Section 9-10 below for more detail on the A003.

Figure 9-3: Sample D085 Aircraft Listing

U.S. Department of Transportation
Federal Aviation Administration

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D085. **Aircraft Listing** **HQ Control:** **02/06/14**

HQ Revision: **02a**

The certificate holder is authorized to conduct operations under 14 CFR Part 135 using the aircraft identified on this operations specification.

Registration No.	Serial No.	Aircraft M/M/S
N1234S	210-56789	Cessna T210M
N987CS	421C-1100	Cessna 421C
N166ER	421B-0678	Cessna 421B
N369RT	436	deHavilland DHC-6-300
N567DB	3522	Bell 206 L-IV
N23456	7536	Bell 407

1. The Certificate Holder applies for the Operations in this paragraph
2. Issued by the Federal Aviation Administration.
3. These Operations Specifications are approved by the direction of the Administrator.

DIGITALLY FAA SIGNED 4/18/04 3:56:10 PM
Currius, Uriah R.
Principal Operations Inspector

4. Date Approval is Effective: 04/18/2004Amendment Number: 13
5. I hereby accept and receive the Operations Specifications in this paragraph.

DIGITALLY INDUSTRY SIGNED 4/15/04 5:54:10 PM
Kool, Igor M.
Director of Maintenance Date: 04/15/2004

Print Date: 04/18/2015 D085-1 CERTIFCATE NO: WOKA285D

OK CORRAL AVIATION, INC.

9-5 Minimum Equipment List (MEL) Authorization – D095

If an operator elects to have an MEL for their aircraft, it will be approved on D095. Only the type aircraft listed are authorized to use an MEL. On the D095 the make and model of an operator's aircraft with approved MELs will be listed. In a few cases the D095 will also list the MMEL it was derived from, along with the approval date for the MEL in

question, although these are usually left off. Ensure that MELs carried in aircraft are approved for that specific model aircraft.

See below for an example of one page of a D095.

Non-Part 135 MELs (Parts 91, 133 & 137) must be approved by a Letter of Authorization (LOA). The LOA is authorized on a D095. See 9-15 for the link and instructions for accessing the FAA's MMEL website.

Most aircraft models with U.S. Type certificates have an MMEL. Exceptions include single-engine piston airplanes which have a generic "Single-Engine Airplane" MMEL and certain restricted aircraft. Many aircraft will have an MMEL version for commercial air carrier operators and another for Part 91 operators. For Part 135 air carriers, the operator will use the MMEL to develop a company MEL. For Part 91 operators (includes Part 133 & 137) the LOA authorizes them to "use the MMEL as an MEL."

The FAA periodically revises MMELs. Revisions are classified as mandatory or non-mandatory.

1. **Mandatory revisions** are "number" changes. For mandatory "number" revisions, Part 91 and Part 135 operators are required to start using the revised MMEL within 90 days (FAA Order 8900.1, Volume 4).

2. **Non-mandatory revisions** are identified by a lower-case letter following the revision number, i.e., 7a. non-mandatory revisions do not need to be incorporated until the next mandatory "number" change.

Figure 9-4: Sample D095 Minimum Equipment List (MEL) Authorization

U.S. Department of Transportation

Federal Aviation Administration

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D095. **Minimum Equipment List (MEL) Authorization** **HQ Control:** **08/15/13**

HQ Revision: **020**

The certificate holder is authorized to use an approved Minimum Equipment List (MEL) provided the conditions and limitations of this paragraph are met. The certificate holder shall not use an MEL for any aircraft that is not specifically authorized by this paragraph.

a. Authorized Aircraft. The certificate holder is authorized to use an approved MEL for the aircraft listed below provided the conditions and limitations of this paragraph are met:

Aircraft M/M/S
Cessna T210M
Cessna 421C
Cessna 421B

b. Maximum Times Between Deferral and Repair. Except as provided in subparagraph d, the certificate holder shall have items repaired within the time intervals specified for the categories of item listed below:

(1) Category A. Items in this category shall be repaired within the time interval specified in the remarks column of the certificate holder's approved MEL.

(2) Category B. Items in this category shall be repaired within 3 consecutive calendar days (72 Hours) excluding the calendar day the malfunction was recorded in the aircraft maintenance log and/or record.

(3) Category C. Items in this category shall be repaired within 10 consecutive calendar days (240 Hours) excluding the calendar day the malfunction was recorded in the aircraft maintenance log and/or record.

(4) Category D. Items in this category shall be repaired within one hundred and twenty consecutive calendar days (2,880 Hours), excluding the calendar day the malfunction was recorded in the aircraft maintenance log and/or record.

c. MEL Management Program. The certificate holder shall develop and maintain a comprehensive program for managing the repair of items listed in the approved MEL. The certificate holder shall include in a document or its manual a description of the MEL management program. The MEL management program must include at least the following provisions:

(1) A method which provides for tracking the date and when appropriate, the time an item was deferred and subsequently repaired. The method must include a supervisory review of the number of deferred items per aircraft and a supervisory review of each deferred item to determine the reason for any delay in repair, length of delay, and estimated date the item will be repair.

(2) A plan for bringing together parts, maintenance personnel, and aircraft at a specific time and place for repair.

(3) A review of items deferred because of unavailability of parts to ensure that a valid back order exists with a firm delivery date.

Print Date: 12/08/2015 D095-1 CERTIFCATE NO: WOKA285D

OK CORRAL AVIATION, INC.

9-6 Additional Maintenance Requirements – Fixed Wing – D101

The D101 is issued to fixed-wing operators to show the required Time Between Overhaul (TBO) for the equipment used by the operator. It will list the models of aircraft, associated equipment installed, TBOs, and maintenance documents that must be utilized by the operator.

See below for an example of one page of a D101.

Figure 9-5: Sample D101 Additional Maintenance Requirements

Aircraft Engine, Propeller, and Propeller Control (Governor)

U.S. Department of Transportation

Federal Aviation Administration

Operations Specifications

D101. **Additional Maintenance Requirements – Aircraft Engine, Propeller, and Propeller Control (Governor** **HQ Control:** **08/22/10** **HQ Revision:** **000**

The certificate holder is authorized to use the following aircraft type identified below in its 14 CFR Part 135 nine seats or less operations provided these aircraft have met the additional maintenance requirements of Section 135.421:

a. Aircraft Engine. Each installed engine, to include turbo superchargers, appurtenances and accessories necessary for its function shall be maintained in accordance with the maintenance documents listed in the following table. The engine shall be overhauled on or before the time-in-service interval shown in the table.

b. Propeller and Propeller Control (governor). Each installed propeller and propeller control components supplied by its manufacturer shall be maintained in accordance with the maintenance documents listed in the following table. The propeller and propeller control shall be overhauled on or before the time-in-service interval shown in the table.

Aircraft Engine, Propeller, and Propeller Control (Governor)

Airplane Type	Engine			Propeller			Governor		
M/M/S	Make & Model	Maint Doc	Time-in-Service Int	Make & Model	Maint Doc	Time-in-Service Int	Make & Model	Maint Doc	Time-in-Service Int
Cessna T210M	Continental TSIO520L	P/N X30656	1600 Hrs.	Hartzell HC-A2Yk-4	P/N 202B	2000 Hrs. or 5 Yrs. Whichever comes first	Hartzell 2AF31C	P/N X30656	2000 Hrs. or 6 Yrs. Whichever comes first
Cessna 421C	Continental GTSIO520H	P/N X5623	1400 Hrs.	Hartzell HC-A3XK-4	P/N 703A	1800 Hrs. or 5 Yrs. Whichever comes first	Hartzell 2AH34H	P/N X30656	2000 Hrs. or 6 Yrs. Whichever comes first
deHavilland DHC-6-300	Pratt & Whitney PT6A-34	P/N X301342	3600 Hrs. O/H 1800 Hrs. HSI	Hartzell BeTN-3	P/N 146	3000 Hrs. or 6 Yrs. Whichever comes first	Woodward 210625	P/N X30656	3500 Hrs. or 6 Yrs. Whichever comes first

Print Date: 12/08/2015 D101-1 CERTIFCATE NO: WOKA285D

OK CORRAL AVIATION, INC.

9-7 Additional Maintenance Requirements – Rotor – D102

These pages will list the engine TBO times along with the maintenance manuals to be used.

See below for a sample of a D102.

Figure 9-6: Sample D102 Additional Maintenance Requirements – Rotor

U.S. Department of Transportation

Federal Aviation Administration

Operations Specifications

D102. Additional Maintenance Requirements – Rotor **HQ Control:** **08/22/10 HQ Revision: 000**

The certificate holder is authorized to use the following rotorcraft type identified below in its 14 CFR Part 135 nine seats or less operations provided these rotorcraft have met the additional maintenance requirements of Section 135.421. Rotor. Each installed main and auxiliary rotor shall be maintained in accordance with the manufacturer maintenance documents listed in the following table.

Airplane Type	Engine			Rotor Main and Auxiliary
M/M/S	Make & Model	Maintenance	Time-in	Maintenance
Bell 407	Allison 250-C47B	CSP 21001	2000 Hours	BHT-407-MM
Bell 206	Allision 250-C20R	GTP 5232-2	3500 Hours	BHT-206-A/B-MM

1. Issued by the Federal Aviation Administration.

2. These Operations Specifications are approved by the direction of the Administrator.

U.R. Currius

Currius, Uriah R., Principal Maintenance Inspector, NR09

3. Date Approval is Effective: 09/15/2011 Amendment Number: 6

4. I hereby accept and receive the Operations Specifications in this paragraph.

I.M. Kool

Kool, Igor M., Director of Maintenance Date: 09/15/2011

Print Date: 09/15/2014 D102-1 CERTIFCATE NO: WOKA285D

OK CORRAL AVIATION, INC.

9-8 Additional Maintenance Requirements – Emergency Equipment – D104

Maintenance requirements for emergency equipment such as oxygen bottles, fire extinguishers, etc., are listed in the D104.

See below for an example of a D104.

Figure 9-7: Sample D104 Additional Maintenance Requirements – Emergency Equipment

U.S. Department of Transportation
Federal Aviation Administration

Operations Specifications

D104. Additional Maintenance Requirements – Emergency Equipment HQ Control: 08/22/10 HQ Revision: 000

The certificate holder is authorized to use the following emergency equipment in its 14 CFR Part 135 nine seats or less operations, provided the applicable aircraft have met the additional maintenance requirements of Section 135.421:

a. Emergency equipment. Each item of installed emergency equipment shall be maintained in accordance with the manufacturer's maintenance documents and/or the limitations listed in the following table.

(1) In addition to the maintenance document listed in this table, the following specifications must be followed for the applicable listed emergency equipment items:

(a) Oxygen (O2) bottles and liquid fire extinguishers. Inspections, hydrostatic tests, and life limits of pressure vessels manufactured under DOT specification are accomplished as set forth in 49 CFR Part 173, as amended.

(b) Fire extinguishers. Inspections, hydrostatic tests, and life limits of portable fire extinguishers are accomplished as set forth in 46 CFR Sections 71.25 and 162.028, as amended.

(c) Military manufactured. Pressure vessels manufactured under MIL-SPEC are maintained in accordance with applicable military specifications.

(d) Foreign-manufactured. Foreign-manufactured pressure cylinders are maintained in accordance with the applicable foreign manufacturer's specifications.

(e) Other. Pressure cylinders not manufactured under DOT, foreign, or U.S. MIL-SPECS are maintained in accordance with the applicable aircraft manufacturer's specifications.

Emergency Equipment

Emergency Equipment	Maintenance Document	Limitations and Provisions
HALON FIRE EXTINGUISHER	OK CORRAL AVIATION, INC. OPERATIONS MANUAL APPENDIX 7	
OXYGEN SYSTEM, BOTTLE REGULATOR AND MASK		

Print Date: 09/15/2015 D104-1 CERTIFICATE NO: WOKA285D

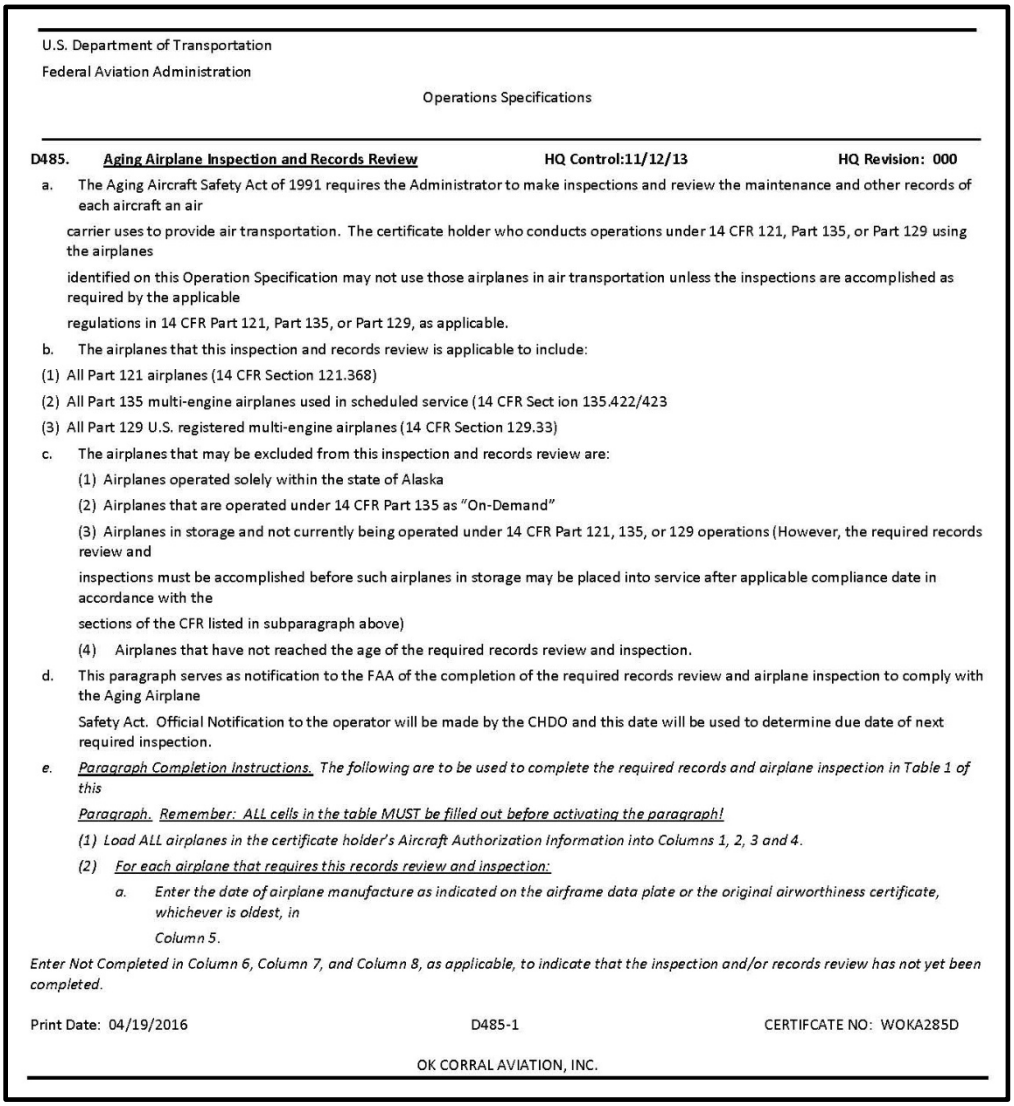
OK CORRAL AVIATION, INC.

9-9 Aging Airplane Inspection and Records Review – D485

The D485 identifies aircraft that are required to have inspections and record checks in accordance with 14 CFR 135.422. Essentially, multi-engine aircraft used in Scheduled Operations that are more than 15 years old require an initial inspection and recurring inspections every seven years.

See below for an example of a D485.

Figure 9-8: Sample D485 Aging Airplane Inspection and Records Review



U.S. Department of Transportation
Federal Aviation Administration

Operations Specifications

D485. Aging Airplane Inspection and Records Review **HQ Control:11/12/13** **HQ Revision: 000**

a. The Aging Aircraft Safety Act of 1991 requires the Administrator to make inspections and review the maintenance and other records of each aircraft an air

carrier uses to provide air transportation. The certificate holder who conducts operations under 14 CFR 121, Part 135, or Part 129 using the airplanes

identified on this Operation Specification may not use those airplanes in air transportation unless the inspections are accomplished as required by the applicable

regulations in 14 CFR Part 121, Part 135, or Part 129, as applicable.

b. The airplanes that this inspection and records review is applicable to include:

(1) All Part 121 airplanes (14 CFR Section 121.368)

(2) All Part 135 multi-engine airplanes used in scheduled service (14 CFR Sect ion 135.422/423

(3) All Part 129 U.S. registered multi-engine airplanes (14 CFR Section 129.33)

c. The airplanes that may be excluded from this inspection and records review are:

(1) Airplanes operated solely within the state of Alaska

(2) Airplanes that are operated under 14 CFR Part 135 as "On-Demand"

(3) Airplanes in storage and not currently being operated under 14 CFR Part 121, 135, or 129 operations (However, the required records review and

inspections must be accomplished before such airplanes in storage may be placed into service after applicable compliance date in accordance with the

sections of the CFR listed in subparagraph above)

(4) Airplanes that have not reached the age of the required records review and inspection.

d. This paragraph serves as notification to the FAA of the completion of the required records review and airplane inspection to comply with the Aging Airplane

Safety Act. Official Notification to the operator will be made by the CHDO and this date will be used to determine due date of next required inspection.

e. *Paragraph Completion Instructions. The following are to be used to complete the required records and airplane inspection in Table 1 of this*

Paragraph. Remember: ALL cells in the table MUST be filled out before activating the paragraph!

(1) Load ALL airplanes in the certificate holder's Aircraft Authorization Information into Columns 1, 2, 3 and 4.

(2) For each airplane that requires this records review and inspection:

a. Enter the date of airplane manufacture as indicated on the airframe data plate or the original airworthiness certificate, whichever is oldest, in

Column 5.

Enter Not Completed in Column 6, Column 7, and Column 8, as applicable, to indicate that the inspection and/or records review has not yet been completed.

Print Date: 04/19/2016 D485-1 CERTIFCATE NO: WOKA285D

OK CORRAL AVIATION, INC.

Figure 9-9: Sample D485 Aging Airplane Inspection and Records Review (Continued)

U.S. Department of Transportation

Federal Aviation Administration

Operations Specifications

c. When the appropriate inspection is complete, insert the month and year of the accomplishment in Column 6 and Column 7, as applicable.

d. When both inspections are complete, enter the date (month/year) that the official notification was sent to the certificate holder in Column 9.

(3) For airplanes that are operated solely within the state of Alaska:

a. Load the airplanes in Columns 1 through 4 per Item (1) above

b. Select and enter Alaska Intrastate- N/A (for not applicable) in EACH of the following columns: Column 5, Column 6, Column 7, and Column 8.

(4) For airplanes that are operated under 14 CFR Part 135 as "On-Demand":

a. Load the airplanes in Columns 1 through 4 per Item (1) above

b. Select and enter On-Demand (135)-N/A (for not applicable) in EACH of the following columns: Column 5, Column 6, Column 7, and Column 8.

(5) For airplanes in storage that will not have the required records review and inspection accomplished:

a. Load the airplanes in Columns 1 through 4 per Item (1) above

b. Select and enter Storage-Not Completed in EACH of the following columns: Column 5, Column 6, Column 7, and Column 8.

(6) For airplanes that have not reached the age where the required records review and inspection must be accomplished:

a. Load the airplanes in Columns 1 through 4 per Item (1) above

b. Select and enter Below Threshold-N/A (for not applicable) in EACH of the following columns: Column 5, Column 6, Column 7, and Column 8.

Process the paragraph and activate it. This paragraph may be considered valid if completed, signed, and activated by the FAA. It does not require the signature of the operator for the paragraph and its data to be considered valid.

TABLE 1

(*These will be loaded from the Certificate Holder Aircraft Authorization airplane information.)

Registration No.	Serial No.	Nose Number if Applicable	Airplane M/M/S	Date of Airplane Manufacture	Airplane Inspection Completed	Records Review Completed	Operator Notification
N421BB	421B-0876	N/A	Cessna 421B	On Demand (135)-N/A	On Demand (135)-N/A	On Demand (135)-N/A	On Demand (135)-N/A
N421CC	421C-701	N/A	Cessna 421C	December 3, 1979	June 17, 2003	June 17, 2003	July 3, 2003

Print Date: 12/08/2015 D485-2 CERTIFCATE NO: WOKA285D

OK CORRAL AVIATION, INC.

9-10 Airplane/Aircraft Authorization or Rating and Limitations – A003

Two types of A003 may be encountered:

1. **A003 – Airplane/Aircraft Authorization.** For Part 133, 135 and 137 Operators, the A003 will provide the same information as the D085.

2. **A003 – Ratings and Limitations (Repair Station).** For Certified Repair Stations (CRS) the A003 will identify the ratings the CRS holds. A Class rating authorizes a CRS to work on multiple models of aircraft, engine, propellers, etc., whereas a Limited rating restricts them to specific models of aircraft, engines, propeller, radios, instruments and accessories. The A003 may list the specific aircraft, engines or propellers, etc., or will specify a separate Capabilities List that will identify the authorizations. See 14 CFR §145.59 and §145.61 for more detail on CRS ratings.

9-11 Autopilot in Lieu of Required Second-in-Command – A015

This page may need to be checked in Part A of the Ops Spec, to determine if an airplane is authorized to operate with a single pilot.

See below for an example of an A015.

Figure 9-10: Sample A015 Autopilot in Lieu of Required Second-in-Command

U.S. Department of Transportation
Federal Aviation Administration

Operations Specifications

A015. Autopilot in Lieu of Required Second-in-Command **HQ Control: 04/30/15**
HQ Revision: 01b

The certificate holder is authorized to use the aircraft and its autopilot system listed below, in IFR operations, in lieu of a required second-in-command provided the following provisions are met.

a. The pilot is command has satisfactorily completed the proficiency requirements of 14 CFR Section 135.297(g).

b. The installed autopilot system is operational in accordance with Section 135.105(c)(1).

AIRCRAFT M/M/S	AUTOPILOT SYSTEM MANUFACTURER/MODEL	ADDITIONAL CONDITIONS/LIMITATIONS
CESSNA CE-T210M	CESSNA / 400B	
CESSNA CE-421B	BENDIX / KING KAP 140	
CESSNA CE-421C	CESSNA / ARC 800B IFCS	
DEHAVILLAND DHC-6-300	COLLINS AP-105	

1. Issued by the Federal Aviation Administration.
2. These Operations Specifications are approved by the direction of the Administrator.

I. B. Good

Good, Ivan B., Principal Operations Inspector, NR09

3. Date Approval is Effective: 09/27/2015 Amendment Number: 8
4. I hereby accept and receive the Operations Specifications in this paragraph.

I.M. Kool

Kool, Igor M., Director of Maintenance Date: 09/27/2015

Print Date: 07/10/2015 A015-1 CERTIFCATE NO: WOKA285D

OK CORRAL AVIATION, INC.

9-12 Single-Engine IFR Passenger-Carrying Operations Under 14 CFR Part 135 – A046

If an operator has single-engine aircraft that are authorized to carry passengers under IFR conditions, it will be approved on this Ops Spec. What needs to be remembered is that per 14 CFR 135.421(c) all aircraft approved under A046 must be on some type of approved Engine Trend Monitoring program which includes an oil analysis program. The records for both the monitoring program and oil analysis must be maintained with the engine maintenance records.

9-13 Operating Certificate Numbers

Certificate Numbers have four specific elements. The first three alphanumeric characters are unique and designate a specific operator. The **fourth character** is always a letter, either **"A" for Air Carrier, "G" for Agricultural operator, "L" for Rotorcraft External - Load operator, or "R" for a Certified Repair Station.** The next element will consist of a three-number identifier. The final element is a letter suffix A through Z. This letter should never be a P, as this is only used during pre-certification.

Note: The Part 135 Certificate Number or Operator Name must be clearly visible from outside the aircraft while sitting on the ground per 14 CFR 119.9.

9-14 Other Ops Spec Pages

Depending on the operator, the following lists some of the other Ops Spec pages that may be encountered.

1. A016 Single Pilot.
2. A061 Electronic Flight Bag (EFB).
3. D072 Continuous Airworthiness Maintenance Program Authorization.
4. D074 Reliability Program Authorization – Entire Aircraft.
5. D075 Reliability Program Authorization – (Parts of Aircraft).
6. D076 Short Term Escalation.
7. D084 Special Flight Permits.
8. D088 Maintenance Time Limitations Authorization.
9. D089 Maintenance Time Limitations Section.

Chapter 10 – Forms

10-1 Introduction

There are numerous forms inspectors use on a frequent basis. Most of these are Forest Service forms; however, as inspectors work closely with the Department of Interior's Office of Aviation Services (OAS), inspectors need to be familiar with OAS forms, as aircraft approved by OAS are accepted by the Forest Service.

At the time of this AIG global revision, the Forest Service and OAS are working to consolidate forms where practical. See the Airworthiness Branch 5700 Shared folder for current forms.

The following figure lists forms frequently used by inspectors in the performance of their duties. Sample forms are displayed on the following pages.

Figure 10-1: Aircraft Inspector Forms

FS Form No.	Description
FS-5700E	Aircraft Maintenance Log
FS-5700-4	Aircraft Approval Card (Airtankers)
FS-5700-17	Interagency Helicopter Load Calculation
FS-5700-21	Airplane Data Record (Card)
FS-5700-21a	Helicopter Data Record (Card)
FS-5700-21b	UAS Data Record (Card)
FS-5700-32	Aircraft Contract Status Report
FS-5700-33	Aircraft Pre-Use Inspection Discrepancy Report
	Point-To-Point Aircraft Data Card (Forest Service)
	Service Truck – Interagency Data Card
	Mechanic Qualification Form
	Mechanic Qualification Card
	Return to Contract Availability Tracking Sheet (Suggested)

The Forest Service uses electronic checklists in AvCheck. These checklists automatically complete all required FS-5700 forms and cards. The online version enables inspectors to complete the checklists at the aircraft and then electronically distribute a card to contractors. AvCheck also has Return to Contract Availability function Inspectors need to use.

10-2 FS-5700E – Aircraft Maintenance Log

Figure 10-2: FS-5700E Aircraft Maintenance Log

A/C NO.	TYPE & MODEL	USDA FOREST SERVICE AIRCRAFT MAINTENANCE LOG	REGION	PAGE

PILOT	DATE	TACH TIME	OIL ADDED	LANDINGS	ENGINE CYCLES	TOTALS CYCLES / LANDINGS

			END	START	TOTAL							
1												PREVIOUS TOTAL
2												LANDING/CYCLES THIS PAGE
3												TOTAL TO DATE:
4												INSPECTION STATUS
5												TYPE DUE / TIME DUE
		TOTALS										

TIM EIN SERVICE	AIRFRAME	ENG NO. 1	ENG NO. 2	VOR CHECK (91.25) DATE _____
PREVIOUS TOTAL				LOCATION _____ BEARING NO. 1_____ NO.2 _____
HOURS THIS PAGE				ERROR_____TYPE TEST _____
TOTAL HOURS TO DATE				DATE DUE _____
				SINATURE _____

ANNUAL DUE	SPECIAL INSP.

NO.	DISCREPANCIES – DATE & INITIAL EACH ENTRY	NO.	CORRECTIVE ACTION	SIGNATURE
	MAINTENANCE FILE COPY			

10-3 FS-5700-4 – Aircraft Approval Card (Airtanker)

Figure 10-3: FS-5700-4 Aircraft Approval Card (Airtanker)

(USED FOR AIRTANKERS ONLY)

AIRCRAFT APPROVAL

(Reference FSM 5710)

Expiration Date

Make/Model

Operator Name and Address

FAA No.

Serial No.

Empty Weight

Gross Wt.

Contract/Rental Agreement No.

AUTHORIZED AIRCRAFT USE *(Inspector initial)*

☐ ~~Passengers~~	☐ ~~Smokejumper~~	☐ ~~Helitanker~~
☐ ~~Cargo~~	☐ ~~Paracargo~~	☐ ~~Bucket~~
☐ ~~Recon~~	☐ _____	☐ ~~Slingload~~
☐ ~~Air Attack~~	☐ _____	☐ ~~Helitorch~~
☐ Airtanker	☐ _____	☐ _____

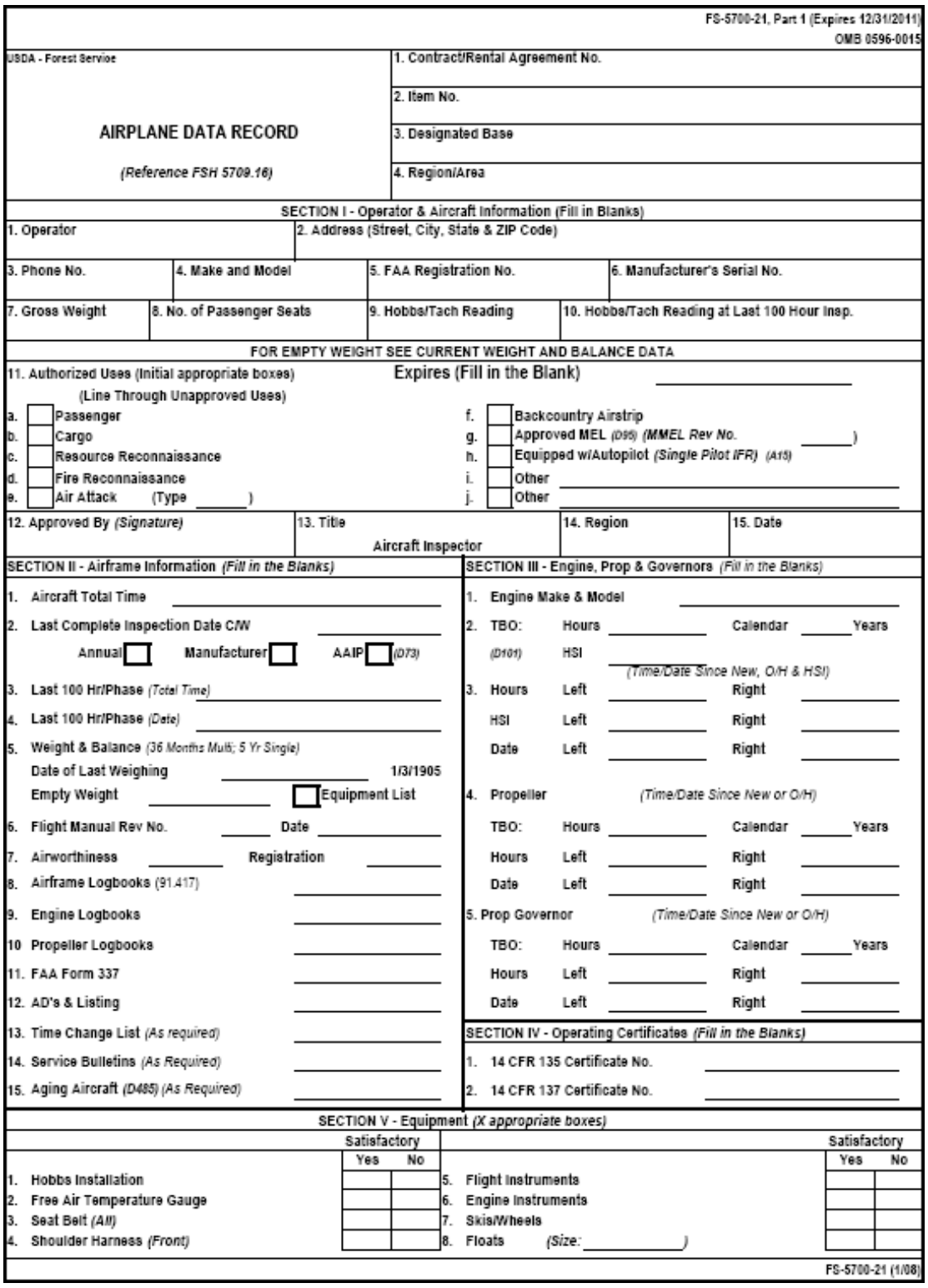
Authorized Inspector Signature | Region | Date

U.S. GOVERNMENT PRINTING OFFICE: 1997-591-065/61013

← *Card with electronic signature invalidwithout date stamp*

10-4 FS-5700-21 – Airplane Data Record

Figure 10-4: FS-5700-21 (Front Page)



FS-5700-21, Part 1 (Expires 12/31/2011)
OMB 0596-0015

USDA - Forest Service

AIRPLANE DATA RECORD

(Reference FSH 5709.16)

1. Contract/Rental Agreement No.
2. Item No.
3. Designated Base
4. Region/Area

SECTION I - Operator & Aircraft Information (Fill in Blanks)

1. Operator	2. Address (Street, City, State & ZIP Code)		
3. Phone No.	4. Make and Model	5. FAA Registration No.	6. Manufacturer's Serial No.
7. Gross Weight	8. No. of Passenger Seats	9. Hobbs/Tach Reading	10. Hobbs/Tach Reading at Last 100 Hour Insp.

FOR EMPTY WEIGHT SEE CURRENT WEIGHT AND BALANCE DATA

11. Authorized Uses (Initial appropriate boxes) — Expires (Fill in the Blank) _____
(Line Through Unapproved Uses)

a. ☐ Passenger
b. ☐ Cargo
c. ☐ Resource Reconnaissance
d. ☐ Fire Reconnaissance
e. ☐ Air Attack (Type _____)
f. ☐ Backcountry Airstrip
g. ☐ Approved MEL *(D95) (MMEL Rev No.* _____)
h. ☐ Equipped w/Autopilot *(Single Pilot IFR) (A15)*
i. ☐ Other _____
j. ☐ Other _____

12. Approved By *(Signature)*	13. Title Aircraft Inspector	14. Region	15. Date

SECTION II - Airframe Information *(Fill in the Blanks)*

1. Aircraft Total Time _____
2. Last Complete Inspection Date C/W _____
   Annual ☐ Manufacturer ☐ AAIP ☐ *(D73)*
3. Last 100 Hr/Phase *(Total Time)* _____
4. Last 100 Hr/Phase *(Date)* _____
5. Weight & Balance *(36 Months Multi; 5 Yr Single)*
   Date of Last Weighing _____ 1/3/1905
   Empty Weight _____ ☐ Equipment List
6. Flight Manual Rev No. _____ Date _____
7. Airworthiness _____ Registration _____
8. Airframe Logbooks (91.417) _____
9. Engine Logbooks _____
10. Propeller Logbooks _____
11. FAA Form 337 _____
12. AD's & Listing _____
13. Time Change List *(As required)* _____
14. Service Bulletins *(As Required)* _____
15. Aging Aircraft *(D485) (As Required)* _____

SECTION III - Engine, Prop & Governors *(Fill in the Blanks)*

1. Engine Make & Model _____
2. TBO: Hours _____ Calendar _____ Years
   (D101) HSI _____
   (Time/Date Since New, O/H & HSI)
3. Hours Left _____ Right _____
   HSI Left _____ Right _____
   Date Left _____ Right _____
4. Propeller *(Time/Date Since New or O/H)*
   TBO: Hours _____ Calendar _____ Years
   Hours Left _____ Right _____
   Date Left _____ Right _____
5. Prop Governor *(Time/Date Since New or O/H)*
   TBO: Hours _____ Calendar _____ Years
   Hours Left _____ Right _____
   Date Left _____ Right _____

SECTION IV - Operating Certificates *(Fill in the Blanks)*

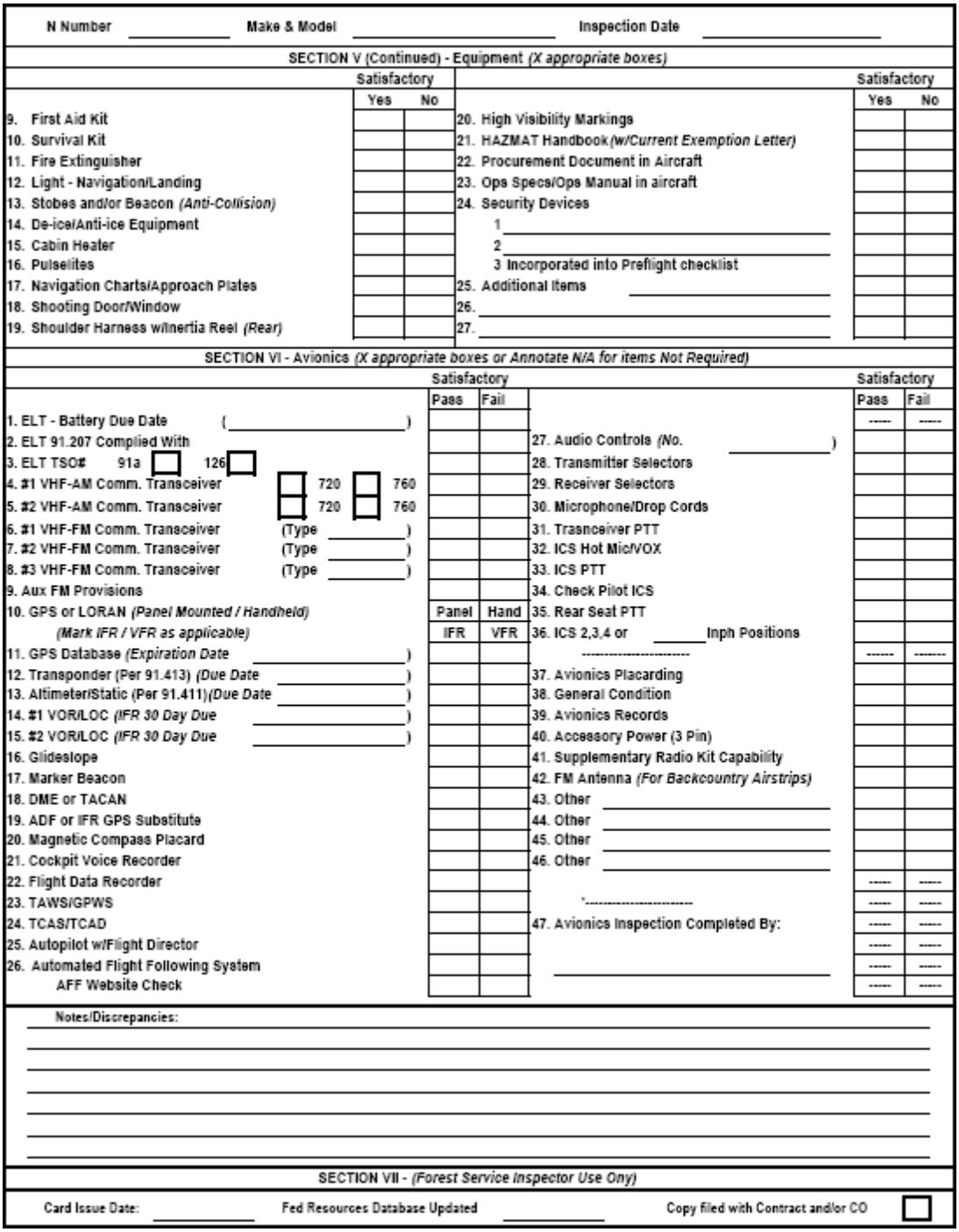
1. 14 CFR 135 Certificate No. _____
2. 14 CFR 137 Certificate No. _____

SECTION V - Equipment *(X appropriate boxes)*

	Satisfactory Yes	Satisfactory No		Satisfactory Yes	Satisfactory No
1. Hobbs Installation			5. Flight Instruments		
2. Free Air Temperature Gauge			6. Engine Instruments		
3. Seat Belt *(All)*			7. Skis/Wheels		
4. Shoulder Harness *(Front)*			8. Floats *(Size:* _____)		

FS-5700-21 (1/08)

Figure 10-5: FS-5700-21 (Back Page)



N Number _____ Make & Model _____ Inspection Date _____

SECTION V (Continued) - Equipment *(X appropriate boxes)*

	Satisfactory Yes	Satisfactory No		Satisfactory Yes	Satisfactory No
9. First Aid Kit			20. High Visibility Markings		
10. Survival Kit			21. HAZMAT Handbook *(w/Current Exemption Letter)*		
11. Fire Extinguisher			22. Procurement Document in Aircraft		
12. Light - Navigation/Landing			23. Ops Specs/Ops Manual in aircraft		
13. Strobes and/or Beacon *(Anti-Collision)*			24. Security Devices		
14. De-ice/Anti-ice Equipment			1 _____		
15. Cabin Heater			2 _____		
16. Pulselites			3 Incorporated into Preflight checklist		
17. Navigation Charts/Approach Plates			25. Additional Items _____		
18. Shooting Door/Window			26. _____		
19. Shoulder Harness w/Inertia Reel *(Rear)*			27. _____		

SECTION VI - Avionics *(X appropriate boxes or Annotate N/A for items Not Required)*

	Satisfactory Pass	Satisfactory Fail		Satisfactory Pass	Satisfactory Fail
1. ELT - Battery Due Date (_____)				-----	-----
2. ELT 91.207 Complied With			27. Audio Controls *(No.* _____)		
3. ELT TSO# 91a ☐ 126 ☐			28. Transmitter Selectors		
4. #1 VHF-AM Comm. Transceiver ☐ 720 ☐ 760			29. Receiver Selectors		
5. #2 VHF-AM Comm. Transceiver ☐ 720 ☐ 760			30. Microphone/Drop Cords		
6. #1 VHF-FM Comm. Transceiver (Type _____)			31. Trasnceiver PTT		
7. #2 VHF-FM Comm. Transceiver (Type _____)			32. ICS Hot Mic/VOX		
8. #3 VHF-FM Comm. Transceiver (Type _____)			33. ICS PTT		
9. Aux FM Provisions			34. Check Pilot ICS		
10. GPS or LORAN *(Panel Mounted / Handheld)*	Panel	Hand	35. Rear Seat PTT		
(Mark IFR / VFR as applicable)	IFR	VFR	36. ICS 2,3,4 or _____ Inph Positions		
11. GPS Database *(Expiration Date* _____)			----------	------	-------
12. Transponder (Per 91.413) *(Due Date* _____)			37. Avionics Placarding		
13. Altimeter/Static (Per 91.411)*(Due Date* _____)			38. General Condition		
14. #1 VOR/LOC *(IFR 30 Day Due* _____)			39. Avionics Records		
15. #2 VOR/LOC *(IFR 30 Day Due* _____)			40. Accessory Power (3 Pin)		
16. Glideslope			41. Supplementary Radio Kit Capability		
17. Marker Beacon			42. FM Antenna *(For Backcountry Airstrips)*		
18. DME or TACAN			43. Other _____		
19. ADF or IFR GPS Substitute			44. Other _____		
20. Magnetic Compass Placard			45. Other _____		
21. Cockpit Voice Recorder			46. Other _____		
22. Flight Data Recorder				-----	-----
23. TAWS/GPWS			----------	-----	-----
24. TCAS/TCAD			47. Avionics Inspection Completed By:	-----	-----
25. Autopilot w/Flight Director				-----	-----
26. Automated Flight Following System			_____	-----	-----
AFF Website Check				-----	-----

Notes/Discrepancies: _____

SECTION VII - *(Forest Service Inspector Use Only)*

Card Issue Date: _____ Fed Resources Database Updated _____ Copy filed with Contract and/or CO ☐

10-5 FS-5700-21a – Helicopter Data Record

Figure 10-6: FS-5700-21a (Front Page)

FS-5700-21a, Part 2 (12/2011)
OMB 0596-0015

USDA - Forest Service	1. Contract/Rental Agreement No.	
	2. Item No.	
HELICOPTER DATA RECORD (Reference FSH 5709.16)	3. Designated Base	
	4. Region/Area	

SECTION I - Operator & Aircraft Information (Fill in Blanks)

1. Operator	2. Address (Street, City, State & ZIP Code)				
3. Phone No.	4. Make and Model	5. FAA Registration No.	6. Manufacturer's Serial No.	7. Hobbs Reading	
8. Max Gross Weight (Internal)	9. Max Gross Weight (Ext.)	10. No. of Passengers	11. Type Fuel	12. Fuel Flow (Cruise)	

13. Authorized Uses (Initial appropriate boxes) (Line Through Unapproved Uses)

Expires (Fill in the Blank) _____ *(Month/Year)*

- a. ☐ Passenger & Cargo
- b. ☐ Low Level Reconnaissance
- c. ☐ Cargo Only(Restricted Category)
- d. ☐ External Load *(Sling)*
- e. ☐ Rappelling
- f. ☐ Aerial Ignition
- g. ☐ Manager May Ride *(Type 1 ONLY)*
- h. ☐ Fire Suppression - Interagency
- i. ☐ Fire Suppression - Local
- j. ☐ Water/Retardant Bucket
- k. ☐ Fixed Tank Tank No.( )
- l. ☐ Longline/Remote Hook
- m. ☐ Rapid Refuel CCR Splash.
- n. ☐ Air Attack Type( )
- o. ☐ Approved for Left Seat Ops
- p. ☐ Approved MEL MMEL Rev No (D95)
- q. ☐ ~~Other~~ _____
- r ☐ ~~Other~~ _____
- s. ☐ ~~Other~~ _____
- t. ☐ ~~Other~~ _____
- u. ☐ ~~Other~~ _____

14. Approved By *(Signature)*	15. Title	16. Region	17. Date

electronically signed: ← *Card with electronic signature invalid without date stamp*

10-6 FS 5700-32 – Aircraft Contract Status Report

Figure 10-7: FS 5700-32

UNTIED STATES
DEPARTMENT OF AGRICULTURE
FOREST SERVICE

AIRCRAFT CONTRACT STATUS REPORT

Contractor	Gov't Team Members	Contract No
		Item No.
		Start Date

The following pilot(s) and/or aircraft have been inspected for compliance with the specifications of the referenced contract:

Pilot(s)	Mechanic	Aircraft

☐ Personnel and/or aircraft listed above are approved.

☐ Personnel and/or aircraft listed above will be approved when the identified deficiencies are corrected. Prior to placing the above listed aircraft or pilots into service, an authorized inspector shall determine that each deficiency listed has been corrected. The contractor will provide a signed copy of documentation of corrective action taken to the FS National Aviation Manager.

☐ Reinspection of personnel and/or aircraft above required prior to placing into service. The contractor shall notify the inspector when they are ready for reinspection.

Reinspection Schedule: _____ (Date) _____ (Location) _____ (Inspector)

Remarks:

☐ INSPECTED WITH _____ DISCREPANCIES (SEE ATTACHED LIST)	SIGNATURE	DATE
☐ DISCREPANCIES CORRECTED (ATTACH DOCUMENTATION)	SIGNATURE	DATE
☐ REINSPECTION REQUIRED AS NOTED	SIGNATURE	DATE
☐ APPROVED	SIGNATURE	DATE

I acknowledge receipt of this report _____ (Signature of Contractor/Representative) _____ (Date)

Reported By: _____ (Signature of Government Representative) Title: *Aircraft Inspector* Date: _____

CONTRACTING

10-7 FS 5700-33 – Aircraft Pre-Use Inspection Discrepancy Report

Figure 10-8: FS 5700-33

AIRCRAFT PRE-USE INSPECTION DISCREPANCY REPORT

v3.0

OPERATOR _____ AIRCRAFT TYPE _____

BASE _____ AIRCRAFT NUMBER _____

CONTRACT NUMBER _____

Contract Page # _____ Item No. _____	Discrepancy #1
Corrective Action By _____	
Contract Page # _____ Item No. _____	Discrepancy #2
Corrective Action By _____	
Contract Page # _____ Item No. _____	Discrepancy #3
Corrective Action By _____	
Contract Page # _____ Item No. _____	Discrepancy #4
Corrective Action By _____	

Discrepancies written by: _____ _____

Corrective action inspected by: _____ _____

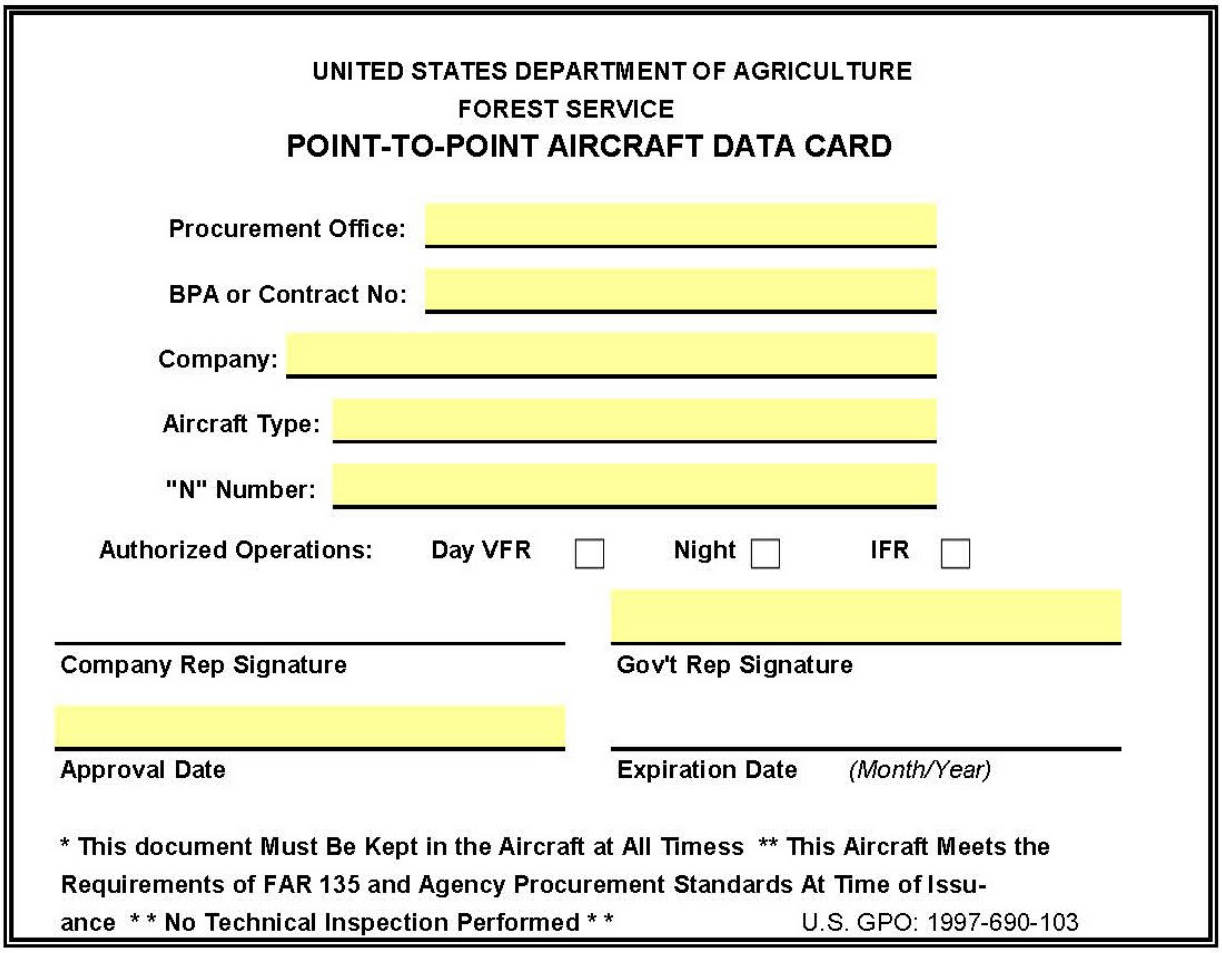
Authorized Contractor Maintenance Supervisor Date

A&P / IA / REPAIR STATION NUMBER _____

(Send to Inspector when Discrepancies Corrected)

10-8 Point-to-Point Aircraft Data Card (Forest Service)

Figure 10-9: Point-to-Point Card



UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
POINT-TO-POINT AIRCRAFT DATA CARD

Procurement Office: _____

BPA or Contract No: _____

Company: _____

Aircraft Type: _____

"N" Number: _____

Authorized Operations: Day VFR ☐ Night ☐ IFR ☐

_____ _____
Company Rep Signature Gov't Rep Signature

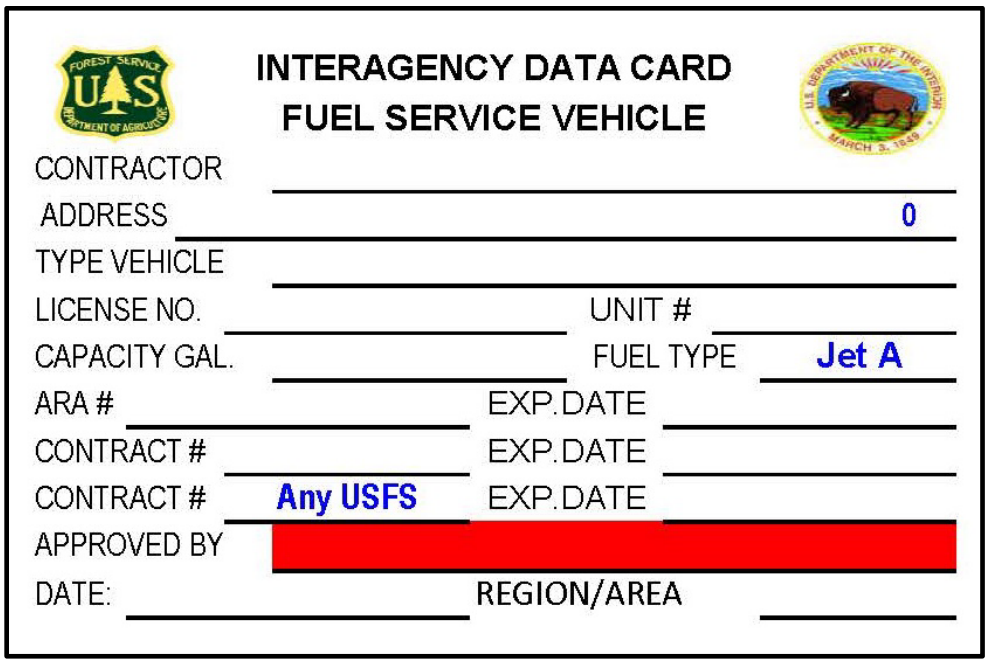
_____ _____
Approval Date Expiration Date *(Month/Year)*

* This document Must Be Kept in the Aircraft at All Timess ** This Aircraft Meets the Requirements of FAR 135 and Agency Procurement Standards At Time of Issuance ** No Technical Inspection Performed **

U.S. GPO: 1997-690-103

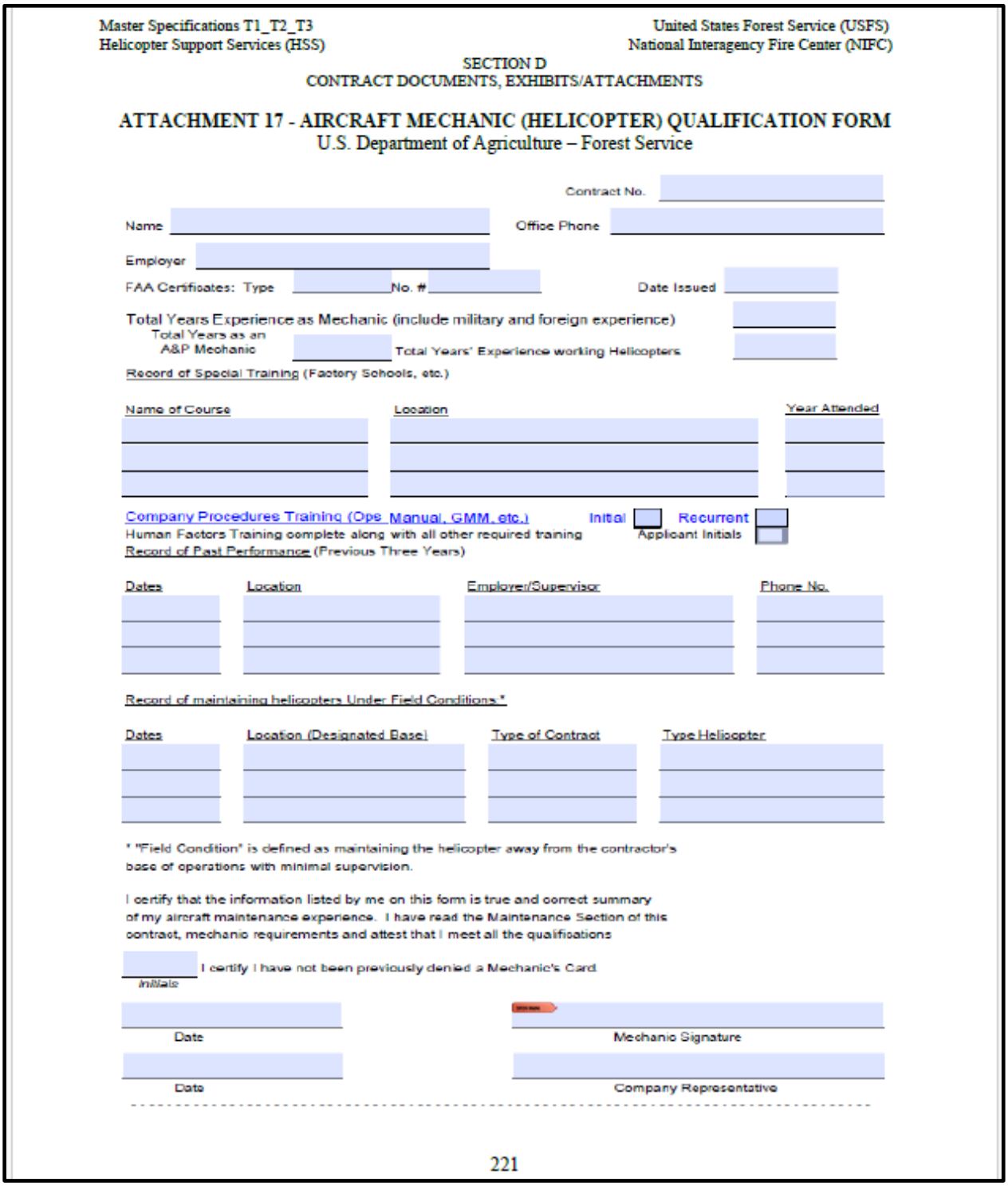
10-9 Service Truck – Interagency Data Card

Figure 10-10: Service Truck – Interagency Data Card



10-10 Mechanic Qualification Form

Figure 10-11: Mechanic Qualification Form (Page 1)



Master Specifications T1_T2_T3
Helicopter Support Services (HSS)

United States Forest Service (USFS)
National Interagency Fire Center (NIFC)

SECTION D
CONTRACT DOCUMENTS, EXHIBITS/ATTACHMENTS

ATTACHMENT 17 - AIRCRAFT MECHANIC (HELICOPTER) QUALIFICATION FORM
U.S. Department of Agriculture – Forest Service

Contract No.

Name _____ Office Phone _____

Employer _____

FAA Certificates: Type _____ No. # _____ Date Issued _____

Total Years Experience as Mechanic (include military and foreign experience) _____

Total Years as an A&P Mechanic _____ Total Years' Experience working Helicopters _____

Record of Special Training (Factory Schools, etc.)

Name of Course	Location	Year Attended

Company Procedures Training (Ops Manual, GMM, etc.) Initial ☐ Recurrent ☐
Human Factors Training complete along with all other required training Applicant Initials
Record of Past Performance (Previous Three Years)

Dates	Location	Employer/Supervisor	Phone No.

Record of maintaining helicopters Under Field Conditions.*

Dates	Location (Designated Base)	Type of Contract	Type Helicopter

* "Field Condition" is defined as maintaining the helicopter away from the contractor's base of operations with minimal supervision.

I certify that the information listed by me on this form is true and correct summary of my aircraft maintenance experience. I have read the Maintenance Section of this contract, mechanic requirements and attest that I meet all the qualifications

_____ I certify I have not been previously denied a Mechanic's Card
Initials

_____ _____
Date Mechanic Signature

_____ _____
Date Company Representative

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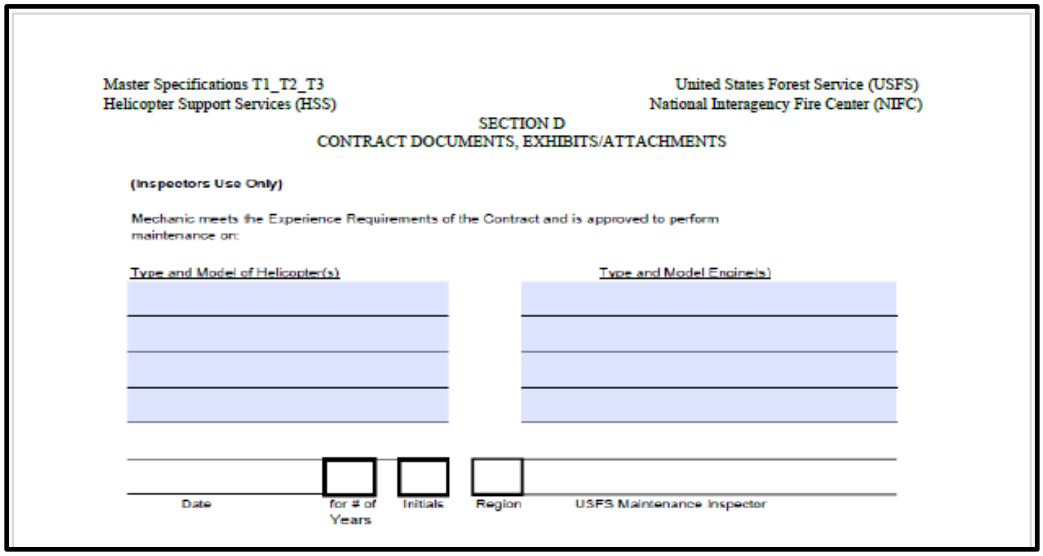
Figure 10-12: Mechanic Qualification Form (Page 2)



Master Specifications T1_T2_T3
Helicopter Support Services (HSS)

United States Forest Service (USFS)
National Interagency Fire Center (NIFC)

SECTION D
CONTRACT DOCUMENTS, EXHIBITS/ATTACHMENTS

(Inspectors Use Only)

Mechanic meets the Experience Requirements of the Contract and is approved to perform maintenance on:

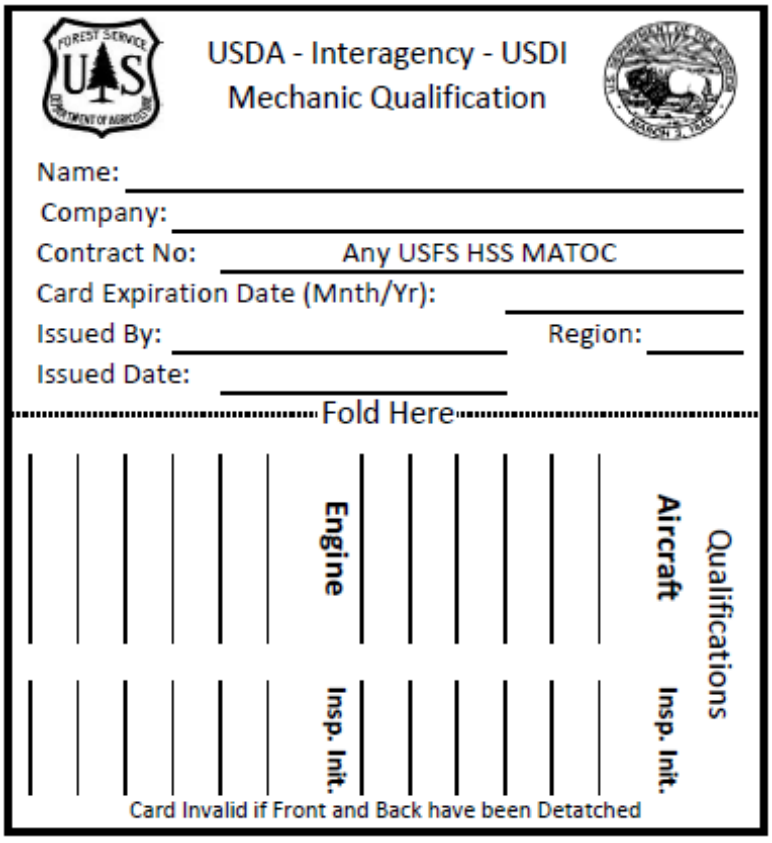
Type and Model of Helicopter(s)

Type and Model Engine(s)

Date | for # of Years | Initials | Region | USFS Maintenance Inspector

10-11 Mechanic Qualification Card

Figure 10-13: Mechanic Qualification Card



USDA - Interagency - USDI
Mechanic Qualification

Name: _____

Company: _____

Contract No: Any USFS HSS MATOC

Card Expiration Date (Mnth/Yr): _____

Issued By: _____ Region: _____

Issued Date: _____

Fold Here

Aircraft Qualifications | Insp. Init.

Engine | Insp. Init.

Card Invalid if Front and Back have been Detatched

10-12 Interagency Helicopter Load Calculation

Figure 10-14: Interagency Helicopter Load Calculation (OAS-67/FS 5700-17)

INTERAGENCY HELICOPTER LOAD CALCULATION Electronic Version 1.0 (3/04)	MODEL	
	N#	
PILOT(S)	DATE	
MISSION	TIME	
1 DEPARTURE	PA	OAT
2 DESTINATION	PA	OAT
3 HELICOPTER EQUIPPED WEIGHT		
4 FLIGHT CREW WEIGHT		
5 FUEL WEIGHT gals X lbs/gal		
6 OPERATING WEIGHT (3 + 4 + 5)		

	Non-Jettisonable		Jettisonable
	HIGE	HOGE	HOGE- J
7a PERFORMANCE REFERENCE (List chart/supplement from Flight Manual)			
7b COMPUTED GROSS WEIGHT (From Flight Manual **Performance** Section)			
8 WEIGHT REDUCTION (Required for all Non-Jettisonable loads)			
9 ADJUSTED WEIGHT (7b minus 8)			
10 GROSS WEIGHT LIMITATION (From Flight Manual **Limitations** Section)			
11 SELECTED WEIGHT (**Lowest** of 9 or 10)			
12 OPERATING WEIGHT (From Line 6)			
13 ALLOWABLE PAYLOAD (11 minus 12) ***Exceeds = Allowable Exceeded***			

14 PASSENGERS/CARGO	
15 ACTUAL PAYLOAD (Total of all weights listed in Item 14) **Line 15 must not exceed Line 13 for the intended mission (HIGE, HOGE or HOGE-J)**	
PILOT SIGNATURE	HazMat Onboard
MANAGER SIGNATURE	YES ☐ NO ☐

HCM-8 (03/2006)

Electronic Load Calculation Guidelines

The electronic load calculation is available as a training tool or may be used in lieu of the booklet form. The form is an Excel worksheet and makes automatic computations as data is entered by the pilot or government representative. It is really no different than the paper version; ***Equipped Weight, Computed Gross Weight and Gross Weight Limitations must be derived by flight manual reference and entered by the pilot.***

Please be aware of the following important notes:

1) If you receive this as an E-mail attachment, save to hard drive prior to using.
2) The entire worksheet is protected. The format and function cannot be altered.
3) Worksheets can be completed, named and saved individually.
4) As the cursor is moved over a field, a Comment Box will appear offering explanation or instruction for that
5) Information is entered into the yellow fields by the user.
6) The blue cells are locked and data cannot be entered by the user. They perform automatic functions.
7) If the electronic format is used for actual helicopter operations, the form must be printed out in black & white, signed by the Pilot and Helicopter Manager and retained.

10-13 Return to Contract Availability Offline Job Aid

Figure 10-15:RTCA Job Aid

Return To Contract Availability			
Aircraft: Reg No. & Call Sign		Designated Base	
Manufacterer Serial No.		In Region	
Make/Model		Physical Location	
Operator		Manager Name	
Operator Phone		Manager Phone	
Designated Region		RTCA Request Time	
Discrepancy Information			
Discrepancy Found	In-Flight / On-Ground	*Discrepancy Information*	
JASC Group	Fill in AVCheck		
JASC Subsystem	Fill in AVCheck		
Flight Terminated	Yes / No		
Emergency Declared	Yes / No		
Other Systems Affected Description	Yes / No		
Other Systems Affected Description			
Corrective Action			
Parts Replaced	Yes / No	*Corrective Action(s) Taken*	
Parts Replaced Description			
Ops/Leak Check	Yes / No		
Powertraing, Drivetrain or Flight Control?	Yes / No		
RII Required	Yes / No		
Flight Check Required	Yes / No		
ASI Inspection Required	Yes / No		
Defferable Under Contract/Policy	Yes / No		
Deferable under Approved MEL	Yes / No		
MMEL Rev. is correct	Yes / No		
Repair Interval	3(B) 10 (C) 120(D)		
Notifications			
Other ASI	Yes / No		
Name			
SAFECOM Required	Yes / No		
Service Difficulty Report Required	Yes / No		
Submitted	Yes / No		
RTCA Approval			
RTCA Approved By		Approved By Title	
Region		RTCA Approal Date& Time	
Logged in AvCheck		RTCA No.	

Chapter 11 – Contract/Cooperator Aircraft Inspection Procedures

11-1 Introduction

An authorized Aircraft Inspector must approve aircraft prior to their use by the Forest Service. This is often referred to as “carding.”

This chapter describes the procedures for conducting inspections. You should tailor your approach to the individual circumstances present at each inspection.

In order to approve a helicopter for interagency use, it must meet the interagency standard. A current copy of the Interagency Fire Helicopter Standards can be found on the DOI website, OAS Memorandum of Understanding Index, USDA, under USFS. See Appendix C for website.

11-2 Responsibilities

Aircraft operators are responsible for the airworthiness of their aircraft. You are responsible for ensuring the aircraft the USFS use meet the requirements of our policy, contracts, and agreements.

Contract language must never conflict with agency policy. If you find a conflict, you must contact the responsible program office and the CO to resolve the issue before issuing a card.

11-3 Aircraft, Avionics, and Equipment Inspection Policy

Conduct inspections objectively and in accordance with applicable requirements and standards. Only inspect aircraft or equipment when an official request has been made and there is an agreement establishing minimum requirements in place. You must be familiar with the contract or agreement used for the inspection. Use a copy of the contract or agreement and the Pre-use Inspection Checklist together to ensure all contract requirements are met.

Do not take any action to deviate from the requirements of the procurement document or Forest Service policy. Approvals will not be granted if there are any un-addressed deficiencies.

Multiple contracts or task orders may be associated with the same aircraft, and each may have different requirements. Review all awarded contracts thoroughly. You are responsible for ensuring the aircraft meet these requirements. After the inspection,

send the results to the CO and notify appropriate ASIs and the assigned WO Airworthiness Branch POC for nationally managed aircraft.

If you find a problem with a contract specification, or the aircraft does not meet the specification and you determine that it is in the best interest of the Forest Service to change the requirement, you must contact the Contracting Officer for further guidance. Any deviation from the original procurement document must be accompanied by a contract modification issued by the Contracting Officer. A written statement from the CO to proceed while a modification is in work is acceptable. This may be in any format such as email, Teams, or text. In this case, upload the CO's statement into AvCheck. This process may take more time than is allocated for the inspection; if that is the case, you cannot issue a card until either the aircraft meets the requirements as written, or a modification is in place.

Only approved inspectors may perform inspections and complete inspection forms. Should you note a deficiency which is outside your area of responsibility, you must notify an inspector authorized for the applicable area of responsibility. If an appropriate inspector cannot be contacted, document it and forward it to the appropriate inspector and/or CO, or contact the Airworthiness Branch for guidance.

11-4 Aircraft, Avionics, and Equipment Inspection Procedures

Inspections will be accomplished to ascertain that aircraft and equipment are in compliance with the appropriate specifications and that they appear to be in a condition for safe flight. Your test equipment must be maintained and calibrated in accordance with aviation industry standards if it is used for objective performance measures. Special mission aircraft must have a valid Aircraft Data Card, annotated for the special use to be performed.

11-4-1 Restrictions and Limitations

The operator is required to aid and give access to the aircraft to accommodate inspections. Although you may be familiar with the aircraft and its systems, you must be cautious to not damage or appear to damage aircraft. The following precautions limit agency liability for damage.

Do not inspect aircraft without the operator's knowledge and permission. This includes inspections during use.

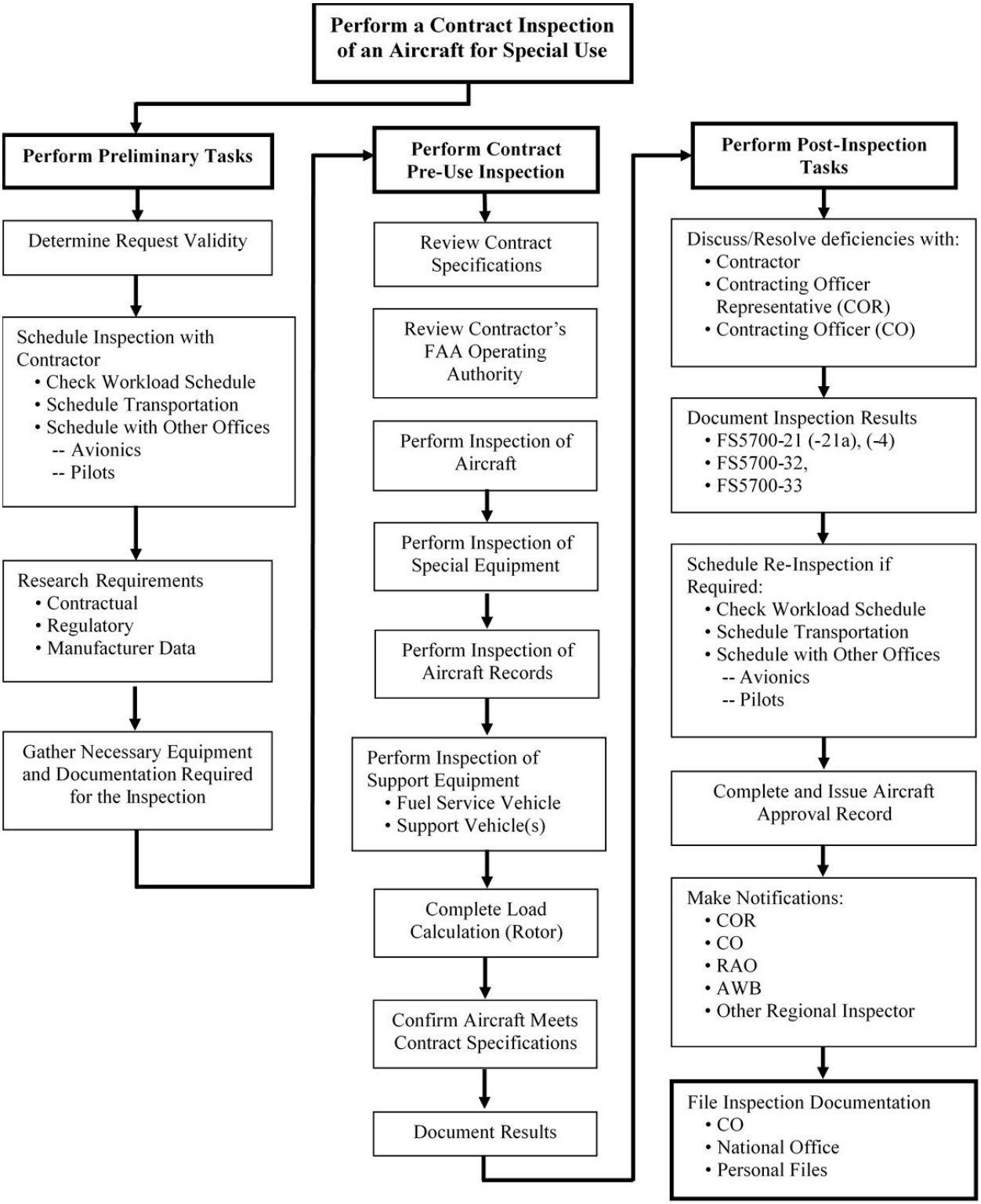
Do not apply main or external power to aircraft. You must be cautious of applying power to systems you are not familiar with. In these cases, have the operator apply power to all required systems.

Do not open or close inspection panels that require tools. Latched panels may only be opened with the approval of the operator and must be closed and secured by them.

Never perform maintenance or preventive maintenance to non-Forest Service owned aircraft or equipment during Pre-use Inspections.

Identify and eliminate any unnecessary personal safety risks involved in the inspection process. Ensure no unacceptable hazards (aircraft on jacks, etc.) exist in the area where the inspection will be conducted and that there is an environment conducive to a safe and efficient inspection of the equipment.

Figure 11-1: Pre-Use Inspection Flow Diagram



11-5 Termination of Inspection

If in the inspector's opinion the operator has failed to make a reasonable attempt to prepare their personnel, aircraft, or equipment to meet requirements, the inspection may be terminated prior to completion. In such cases the FS-5700-32, Aircraft Contract Status Report Form shall be annotated “Inspection Terminated.” Complete the Re-inspection Schedule section of the contract status report, obtain the operator’s signature, provide them with a copy, and notify the Contracting Officer. If the operator chooses not to sign, annotate this and continue to process the form as normal. If the operator fails to maintain a professional atmosphere, depart and inform the CO. You are not required to stay in hostile or unprofessional situations. Regardless, you must remain courteous and professional.

11-6 Pre-use Inspection Checklists

To ensure policy and contract requirements are met, you shall use an Airworthiness Branch approved Pre-use Inspection Checklist (AvCheck).

Aircraft Pre-use Inspection Checklists are extensive. Operators and aircraft must meet policy and contract requirements.

There are five forms required by FSH 5709.16 to document aircraft approvals:

1. FS-5700-21, Airplane Data Record.
2. FS-5700-21a, Helicopter Data Record.
3. FS-5700-21b, UAS Data Record.
4. FS-5700-4, Aircraft Approval Card, Airtanker (also used for Smokejumpers.)
5. Point-to-Point Card, which does not have a form number.

These forms are automatically filled out by the checklist programs.

You must use AvCheck for all crewed aircraft and fuel service vehicles. You must use the approved (e.g. Excel) checklist for UAS. The checklist is a guide to help ensure you are inspecting all required items. It will not cover every aircraft or circumstance. Your inspections and results must be based on agency policy and the applicable contract or agreement.

11-7 Aircraft Pre-Use Inspections

Agency inspections and approvals are required each calendar year for aircraft approved to perform special use mission flights. Aircraft and equipment approvals are valid for

one year from the date of inspection. The Agency's intent is to limit re-inspections when possible. For example, if a carded aircraft is issued a new exclusive use contract or task order, these should be added to the card without further inspection if all required items were covered in the initial inspection. A new inspection may be required if additional missions or equipment are required that were not initially evaluated. In these cases, only the additions require inspection. When adding missions, contracts, or task orders based on the initial inspection, the original expiration date must be used.

11-7-1 Contract Specifications

Check the contracts schedule of Items to determine that the aircraft has been awarded on the contract. Keep in mind that you must review all contract modifications for aircraft that have been added or removed from contract.

Check the contract specifications. This includes the statement of work and all applicable exhibits.

Determine if the aircraft meets the performance specifications and helicopters meet their bid weight for the base year of the contract or are within the required allowance based on the helicopter type for option years.

You are not required to review Helicopter Load Calculations during a pre-use inspection. This is the responsibility of the USFS Aircraft Operations group.

11-7-2 Contractor's Operating Authority

You must verify the contractor's FAA operating authority (14 CFR Part 133, 135, 137). If the aircraft offered for use is not listed in their Operations Specifications (FAA Ops Specs), do not proceed. This check is to ensure the aircraft offered is listed on Page D085 - Aircraft Listing (or A003 for Part 133 and Part 137 aircraft) of the Ops Specs.

Per 14 CFR 135.21(f) operators are required to "carry appropriate parts of the manual on each aircraft when away from the principal base." For aircraft required to operate per 14 CFR part 135, per 14 CFR 119.9, the Part 135 Certificate Number or Operator name must be clearly visible from outside the aircraft while on the ground.

11-7-3 Aircraft Inspection

This is where the knowledge and expertise of the inspector becomes a crucial component of the process. You must use your judgement in determining the depth of inspection required to ensure that all specifications are met.

You are not responsible for the airworthiness of the aircraft. This is the responsibility of the owner/operator. Your job is to determine the general overall condition of the aircraft and determine if the aircraft meets the requirements of the contract.

You may request a ground run-up or operational check of any system to ensure conformity, function, and/or performance.

See Chapter 8 for requirements specific to avionics.

Keep in mind that passengers on these aircraft are relying on you to help ensure they arrive safely at their destination.

For general descriptions of various helicopters and firefighting equipment options, see the Airworthiness Branch 5700 Shared folder.

The following highlights some key points of a Pre-use Inspection.

Interagency Fire Requirements. Ensure that all Interagency Fire Requirement are available and functional for helicopters approved for interagency fire operations. The Interagency Fire requirements are identified in the Pre-use checklists. The interagency agreement (MOU) website can be found in Appendix C.

Water Buckets. The contractually required water buckets for each aircraft must be made available at the pre-use inspection. Verify that the Model Number on the control head matches the Model Number on the bucket, to ensure the capacity of the control head is not exceeded. The Airworthiness Branch 5700 Shared folder provides general information regarding water buckets; however, it is the vendor's responsibility to provide substantiating documentation for your review.

Rappel Anchors must be inspected in accordance with the manufacturer's Instructions for Continued Airworthiness. Special attention should be given to ensure that rappel anchor installations do not interfere with other aircraft modifications.

Security Devices are required by contract and must be two independent devices, either electrical and/or mechanical. Locked windows or doors are not acceptable, and a locking gas cap is a separate requirement that does not serve to meet the security device requirement Removal of security devices must be incorporated into the preflight checklist unless they prevent the aircraft from being started.

11-7-4 Records Review

This should consist of a general check of the records. There are several items found in the records that need to be captured on the Pre-use Inspection Checklist. These include, but are not limited to, Airworthiness Directives, Military Message compliance (when applicable), current inspections status, Weight and Balance data, and TBO requirements. Also, while inspecting the aircraft, serial numbers for some components (i.e., rotor blades) should be noted and a spot check made against the records.

11-7-5 Inspection Documentation

Pre-use checklists (FS-5700-4, -21, -21a, & -21b) are used to document the aircraft inspection. These checklists automatically complete all documents required by FSH 5709.16 (Card, FS-5700-33 - Discrepancy Report, FS-5700-4, FS-5700-21, FS-5700-21a, FS-5700-21b, and FS-5700-32 – Contract Status Form).

The card is used to approve the aircraft, and the Contract Status Report is used to notify the CO of the results of the inspection. After the aircraft has been inspected and it meets all the requirements of the contract, you must provide a signed copy of the card to the contractor to be placed in the aircraft. Digital signatures are preferred, but hard signatures are acceptable.

The Aircraft Contract Status Report Form must be completed for each inspection initiated whether the inspection is completed or terminated (see Chapter 10for a sample form).

All discrepancies must be corrected or acceptably addressed before the aircraft can be used by the Agency. Inspectors may elect to re-inspect the aircraft at their option or issue the card once the discrepancies are cleared. Capture this process on the Contract Status Form and provide it to the contractor.

All discrepancies need to be annotated on the Aircraft Pre-use Inspection Discrepancy Report (see Chapter 10 for a sample form). Operators must correct all discrepancies and provide substantiating documentation. You must review the corrective actions to ensure they are appropriate for each discrepancy. Coordinate with any additional inspectors that created discrepancies. Do not issue a card until all discrepancies are cleared.

Upon completion of the inspection, ensure all required documentation has been uploaded to AvCheck or the UAS SharePoint site as appropriate. The items required for upload include, but are not limited to, the following:

- Contract Status Form
- Aircraft Discrepancy Report
- Approved Aircraft Card
- Inspection Checklist
- Supporting Documentation (as necessary)

If the aircraft is not approved at the time of inspection, ensure these documents are uploaded, except the card. Additionally, you must upload revised documents upon

issuance of the card. This is to capture the condition of the aircraft at the time of inspection and at the time of approval.

11-7-6 Duration of Approval

The maximum approval duration on the Aircraft Data Card for special mission aircraft is one year from the inspection date or until the expiration date of the procurement agreement, whichever is earlier. Expiration dates should be noted by month and year and are valid through the last day of the expiration month. Point-to-Point cards may be issued for up to two years.

You may approve an aircraft for a shorter period on a case-by-case basis. This is generally done for limited missions such as pilot training when the aircraft is safe for flight but may be missing mission equipment. This should be considered an exception and only done in coordination with operations and regional leadership, when applicable.

Individual aircraft not approved for passengers may be approved for 24 months from the initial inspection provided they meet the following requirements:

1. The aircraft has received a field audit within the previous year on the current contract.

2. Each of the Airworthiness KPIs bellow are answered “Yes”.

3. A separate approved Airworthiness Auditor concurs with the approving Inspector.

This would not preclude the aircraft from all oversight but modify it based on the product and services presented by the contractor. Aircraft would still have the same records review performed at the 12-month interval. The documentation below would be completed and uploaded into a new checklist in AvCheck with a copy of the previous checklist. This is a new approval based on the initial inspection and identified KPIs. This is not an “Extension of Approval” as identified in this chapter. The initial Inspector shall be responsible for all Check-Ins to ensure continued compliance and for issuing the 24-month approval.

Figure 11-2: 24 Month Approval KPIs

Airworthiness KPI 24 Month Approval Documentation			
Contractor	**Contract Number**	**Aircraft N Number**	**Date**

KPI	KPI Description	Yes / No	Narrative
1	Inspection Scheduling – Have inspections been proactively scheduled with timely communication and not cancelled or rescheduled without reason or notice?		
2	Pre-inspection Data and Documents – Has all the data been provided and was it given 7 days prior to the inspection?		
3	Aircraft Presentation – Is the aircraft complete, clean and contractually equipped? Is the paperwork, including military messages complete?		
4	No Significant Discrepancies – For example: required equipment not installed, components beyond TBO or inspection limit, structural cracks?		
5	Discrepancy Correction and Card Issuance – Are the discrepancies corrected on the day of the inspection or up to 3 days later?		
6	Based on the above, has a 24-month approval been recommended for auditor review?		
Inspector Signature		**Date:**	
7	Field Audit Check-In – Have any contract “Work Orders” or “Letters of Concern” been issued as a result of Field Audit findings? Are their employees well versed in the company’s processes and the contract?		
8	Return to Contract Action Check-Ins – Are the communications timely and clear? Were repairs made as required by the aircraft technical data and the contract? Do they call themselves unavailable without litigating it?		
9	12 Month Data and Documents Review – Has all the data been provided on schedule and were there no significant discrepancies?		
Airworthiness KPIs 7, 8 and 9 were all completed, and the aircraft is approved for the remainder of the 24-month period.			
Auditor Signature		**Date:**	

11-7-7 Extension of Approval

Extensions may be granted for the convenience of the government due to operational needs and inspector availability. You should use caution when extending cards. When needed, cards should be extended for 30 days and only for enough time to schedule an inspection. Cards shall not be extended past 60 days.

11-8 Contractor Maintenance Personnel Qualifications

When required by contract, maintenance personnel must complete an Aircraft Mechanic Qualification Form (see Chapter 10). You must review the information submitted to ensure that the experience and training requirements are in compliance with the contract. Mechanic cards are operator specific and cannot be transferred if a mechanic gains employment with another company. If the operator no longer employs that mechanic, the card is no longer valid.

Mechanic Cards will be issued for five years; not to exceed the duration of the contract.

When issuing a mechanic card, annotate “Any USFS HSS MATOC” for the contract number provided they meet the requirements for all contracts held by their employer.

11-9 Fuel Service Vehicle

Fuel service vehicles are provided for all helicopters. The Pre-use Inspection Checklist has a list of items to inspect on the fuel truck; however, fuel trucks must meet the requirements of the applicable contract. The card expiration date will be for one year from the date of inspection. Contracts reference NFPA 407 Standard for Aircraft Fuel Servicing.

11-10 Aircraft Inspection Scheduling

1. **Type I & II Helicopters, Airtankers and Smokejumper.** Regional ASIs usually inspect helicopter operators located in their Region. While Regional ASI’s coordinate and schedule most of the aircraft assigned to their region, the Airworthiness Branch has responsibility for oversight of all Type 1 & 2 helicopter, Smokejumper and airtanker / scooper inspection schedule. Regions with high inspection workloads should ask for assistance as soon as possible.

2. **Type III and Light Fixed-Wing Aircraft.** Contracted Type III and light fixed-wing aircraft schedules and coordination are the responsibility of the Regional ASI located in the in which the contractor maintains its home base. Regions with high inspection workloads should ask for assistance as soon as possible.

3. **Point-to-Point Cards.** Point-to-Point aircraft are normally approved for two years and are not required to receive a physical inspection. The only requirement inspectors have regarding issuance of these cards is to verify that the aircraft is approved in D085 of the vendors 14 CFR Part 135, Ops Specs and for the contracted mission type (i.e., passenger/cargo). These aircraft are available for charter by the public, and the FAA provides regulatory oversight.

Aircraft that meet the requirements noted above do meet the minimum requirements of FSH 5709.16 40, which is covered in Chapter 7. See Chapter 10 for a sample Point-to-Point Card.

11-11 Return to Contract Availability (RTCA)

When an aircraft working under contract becomes unavailable and/or is declared “out of service” for aircraft maintenance, the process for returning the aircraft to contract availability has been articulated in each contract and must be followed. There may be slight variations between contracts and programs. This section describes the processes and requirements to return an aircraft to availability.

11-11-1 RTCA Documentation

You must use the checklist in AvCheck for crewed aircraft while performing all RTCAs. Document UAS return-to-availability in the approved system. It is only acceptable to complete RTCAs outside of the approved systems if the appropriate system is not available, such as no connectivity; however, the approved system must be updated as soon as possible once the system is available to you.

11-11-2 Contractor Return to Service

A maintenance release signed and dated by the contractor’s maintenance representative on an *operating document*, which identifies the work done, and states that the maintenance is complete, the aircraft is airworthy and approved for return to service by the operator is required.

An *operating document* is any document or form that the operator uses to document aircraft maintenance activity and airworthiness, such as daily flight log, pilot daily log, aircraft daily flight and maintenance log, and/or aircraft maintenance logs.

11-11-3 Agency Return-to-Availability

The Agency COR/manager must notify you before the aircraft is returned to contract availability for major items listed in FSH 5709.16, 40, Maintenance, Operational and Functional Check Flights.

These items are also listed in the NWCG Standards for Helicopter Operations (NSHO). This requires helicopter managers to contact a maintenance inspector for a return to contract availability for engine removal and replacement, rotor removal and replacement, or power train component removal and replacement.

You should be contacted for approval for return to contract availability for any unscheduled maintenance.

The typical process is to have the contractor send copies of the return to service document and any substantiating documentation you require to ensure the aircraft meets contract and airworthiness requirements. The required documents may vary depending on your needs and the specific circumstance. Copies of these documents and the unique RTCA number provided by Av-Check (when available) should be retained by the COR/manager with their diaries.

Operational checks and functional maintenance flights are required by contract for specific items; however, you may determine that a functional flight is necessary due to operational concerns or other circumstance. This determination must be reasonable. If a contractor indicates they believe an operational check is unreasonable, stop the process and contact the Contracting Officer for resolution before proceeding.

For Airtanker RTCA, single points of contact have been assigned to each vendor. The assignment list is distributed by the Airtanker Program Manager.

11-11-4 Reinspection of Aircraft

The inspector must determine the appropriate level of inspection that is required to provide RTCA and is completely dependent on the circumstances surrounding the maintenance action. This can be a simple review of documentation that is completed via phone and computer work, or it may require an on-site visit. Timely decision making in this process is important. Once a contractor notifies the AMI or COR that an aircraft is approved for return to service, their availability begins at that point unless deficiencies are identified during reinspection.

11-12 Removal of Aircraft Data Cards

Aircraft Inspectors are the only persons authorized to approve aircraft and issue cards. Once a card is issued it is valid until the expiration date entered on the card. You may discover through oversight, an aircraft in use that has a safety or airworthiness issue that must be corrected before the aircraft can continue to be used.

Inform the CO/COR to suspend operations until the aircraft is repaired. Typically, a COR will contact an Aircraft Inspector whenever they become aware of a discrepancy on an aircraft and will not allow the aircraft to be dispatched until the issue is resolved based on your determination.

Typically, an Air Tactical Group Supervisor (ATGS) is assigned as COR for exclusive-use Air Attack aircraft. Due to the nature of the national contracts and aerial firefighting operations, there are circumstances where aircraft may operate in more than one Forest or Region, outside of centralized control. When there is not a COR, or the CO is not available to suspend operations, and there is a safety or airworthiness issue that requires a pause, the ASI has the authority to suspend the card until repairs are made. This must be coordinated with the Regional RAO and RASO and not an independent action.

Caution: Once a card is suspended, the operator is liable to the government for any re-inspection costs. Do not put the government into a situation where it causes a vendor unwarranted expense. Do not remove the aircraft card unless the vendor is being grossly negligent or jeopardizing lives by continuing to operate the aircraft and only after coordinating with the CO and informing them of the reasons for suspending the card.

11-13 Stand Down Protocols

During your duties, it may be necessary to stand-down one aircraft or multiple aircraft. It also may be necessary to stand down a vendor due to operational and/or contractual concerns. Communication / coordination is critical at all levels.

Below are the protocols to follow to determine if stand down is necessary:

1. Determine if it's an airworthiness issue.
    a. If not, STOP! No action is required.
2. Determine if it is a USFS contract.
    a. If not, STOP! Notify the appropriate agency. No further action is required.
3. If it is a USFS contract and it involves airworthiness, proceed as follows:
    a. Identify the what the deficiency is. Is it a maintenance, training or records issue? Or a combination of each?
    b. Identify who the deficiency affects. Does it affect an individual person, one aircraft or multiple? If it affects an aircraft, does there need to be communication with the OEM?
    c. Identify the location(s) / regions and if on a fire, what agency has jurisdiction on it. This may help in identifying members of the Stand Down Team and who needs to be coordinated with.

d. Notify the Airworthiness Branch Chief of the deficiency. The Airworthiness Branch Chief will notify the appropriate staff and identify the Stand Down Team (SDT). If the OEM is involved, add the OEM representative to the Stand Down Team.

e. Stand Down team members may include the following:

i. BC's

ii. Program

iii. RAO

iv. Safety

v. CO

4. Implement Stand Down and develop requirements to be accomplished by the vendor to return to contract availability or satisfy mandated requirements. Determine the why's and how's this happened.

5. If this is a broad issue affecting multiple aircraft or agencies, all efforts will need to be scaled up as appropriate. Poor communication / coordination will compound the problem.

6. Develop oversight plan and discuss with the team. This plan should be capable of monitoring the progress of the vendors completion status of mandated requirements and/or monitoring the vendor after RTCA for a predetermined period.

7. Implement oversight plan and RTCA.

8. Terminate plan on agreed upon date unless requirements are not satisfied. Oversight will continue naturally with Airworthiness Branch duties.

Chapter 12 – Oversight of Aircraft/Operator Programs

12-1 Introduction

5709.16, Chapter 40 §48.04b states that in addition to the responsibilities in FSM 5704.23, the Washington Office, National Branch Chief, Airworthiness, Fire and Aviation Management, (Washington Office detached Unit, Boise, ID) is responsible for conducting audits and aviation activity site visits (see 5719.1, para. 2) in all Regions as the Director, FAM deems necessary or at the request of the Regional Fire Director.

This chapter reviews the processes and procedures for conducting oversight of contractors. The Airworthiness Branch utilizes several tools and job aids which assist in oversight throughout the Fire Year:

1. Pre-Use Inspection
2. Contract Compliance/Quality Assurance (QA) Inspections
3. Aviation Safety and Technical Assistance Team (ASTAT)
4. Inspection During Use
5. Return to Contract Availability (RTCA)

12-2 Pre-Use Inspection

Before an aircraft can be used by the Forest Service it must be inspected annually by an approved Aircraft Inspector; per FSH 5709.16 Chapter 40 this is often referred to as “carding.” This process is used to ensure that contracted aircraft meet contract specifications each year during the life of the contract; the details of this process have been thoroughly articulated in Chapter 11.

12-3 Contract Compliance Inspections/QA Audits

12-3-1 Contract Compliance

Contract compliance is a formal team inspection coordinated and executed with cooperation of the Fire and Aviation Management (FAM) operational and contracting groups. The main purpose of this audit is to proactively identify unsatisfactory practices before they cause an incident or accident. This audit will evaluate the effectiveness of operator programs to ensure the operations are conducted in accordance with the requirements of the contract and highlight benchmarks for industry’s best practices. The objective is to promote and ensure aviation safety and contract compliance by

assessing to what extent the aircraft operators comply with applicable regulations, company policy and procedures, and best practices.

The contract compliance team should have representation from the following branches: Airworthiness, Operations, and Contracting. Attendance by the Safety Branch is optional but preferred. While the team approach is encouraged, it is not required. Branches may perform independent audits due to staffing, scheduling, and operational needs. As the inspector assigned to a contract compliance team you must be designated as an auditor by the Airworthiness Branch, See Ch. 13-2. Each program within the purview of the Airworthiness Branch (Helicopter, Air Tanker, etc.) has specific targets and goals that they strive to achieve each year as well as over the course of a contract cycle. These targets have been articulated by program in Ch. 13.

Coordination of a contract compliance team is typically coordinated by the Operations lead regarding targets and scheduling. The airworthiness representatives will make themselves available for technical and contractual airworthiness requirements that arise during inspections.

The airworthiness auditor assigned to a contract compliance team will travel with the team to the designated locations and perform interviews with the contractors' on-site points of contact for maintenance (typically the mechanic/crew chief). The primary focus of these interviews is to determine that implementation of company policy, procedures, and processes are taking place in accordance with contract requirements and to determine the level of competency that the company has. Most of the interviews will take place in the maintenance workspace where the point of contact is able to demonstrate how they engage with their programs. This is also an opportunity to advocate and promote best practices. Additionally, you will perform an inspection of the aircraft. This should be considered a general airworthiness check, looking for obvious defects, required documents, etc. and not an additional pre-use (carding) inspection. Keep in mind that the aircraft will remain available to be dispatched during the inspection and the team needs to be prepared to "back away" as operations dictate.

Job aids are developed for each program and are intended to guide the interview process during oversight. See the full description of job aids and their use later in this chapter. Upon completion of a contract compliance inspection, you will submit completed job aids and any supporting documentation to the Airworthiness Branch for disposition.

12-3-2 Quality Assurance

Quality Assurance (QA) visits are less formally organized than Contract Compliance and are usually requested and organized by regional leadership. For the airworthiness auditor, they are functionally the same as Contract Compliance, the difference being the team makeup, organization and scheduling which will be determined by the

organizer. There may not always be representation from each operational group though it is preferred.

12-4 Aviation Safety and Technical Assistance Team (ASTAT)

The purpose of ASTATs, from the perspective of the Airworthiness Branch, is to assist aviation leadership in ensuring safe practices during high tempo aviation activity. ASTATs enhance safe, efficient, and effective aviation operations. ASTAT provides assistance to unit and aviation managers, flight crews, and incident management teams for increasing, ongoing or decreasing incident aviation activity.

ASTATs assist and review helicopter and fixed-wing operations on wildland fires.

ASTATs receive an assignment briefing with management concerns and issues identified in a letter delegating authority, which establishes the roles of the team and its expectations. The teams will provide daily feedback to the person(s) identified in the delegation of authority. Teams will conduct an exit briefing and will provide a written report prior to demobilization.

ASTAT Configuration

The following configuration, or a similar combination of positions based upon the needs of the ordering unit, is used when ordering an ASTAT. An ASTAT without a Maintenance Inspector has no technical representation and lacks the qualified individual to provide that oversight. Regions need to field all ASTAT teams with an AMI.

- Aviation Safety Manager
- Operations Specialist (helicopter and/or fixed wing)
- Pilot Inspector
- (ASI) Maintenance Inspector
- (ASI) Avionics Inspector (optional)
- Aircraft Dispatcher (optional)

When you are assigned to an ASTAT Team, you represent the Airworthiness Branch as a technical specialist. You must make yourself available for technical and contractual airworthiness issues that arise during the team’s assignment.

12-5 Inspection During Use

At any time during the contract period, the Government may require inspections, as deemed necessary to determine that the Contractor's equipment and personnel

currently meet specifications. This can be in the form of inspections, weighing, tests, or other means deemed appropriate. The basis for the Government's decision to require these are often based on technical guidance from ASIs. This can manifest at many levels from document review through a physical inspection of work performed; the situation and inspectors' discretion will dictate the appropriate level of inspection that is required. Government costs incurred during these inspections will not be charged to the Contractor. Should the inspection reveal deficiencies that require corrective action and subsequent reinspection, the actual costs incurred by the Government may be charged to the Contractor.

When an aircraft becomes unavailable due to mechanical breakdown, the Government reserves the right to inspect the aircraft after the Contractor's mechanic has approved the aircraft for return to service. See Chapter 11-9. For items covered under 14 CFR 135.415, refer to the contract for specific reporting requirements and AMI responsibilities and guidance.

12-6 Return to Contract Availability

Return to Contract Availability (RTCA) requirements and procedures are found in in Chapter 11.

12-7 Job Aids

Audit Job Aids are maintained in the Airworthiness Branch 5700 Shared folder and customized for individual aircraft programs. They are revised regularly as new key performance indicators are identified and operational needs require. These job aids are meant to be used to guide the audit and interview process during oversight. It is not formulated to be all inclusive. Depending on the time available and the nature of the oversight, only selected sections may be addressed. They can also be used as a quick reference for finding specific foundational documents and guidance. The term Procedures Manual in the following references refers to either the Air Carrier Operations Manual or Repair Station Manual, depending on the type of operation in question. For FAA Order 8900.1 references, the Volume and Chapter are listed, (i.e., 8900.1, 3-131, would indicate Volume 3, Chapter 131).

Chapter 13 – Quality Assurance Strategy

13-1 Introduction

Two of the primary responsibilities for airworthiness personnel are to provide initial approval of contracted aircraft and provide oversight of the maintenance being performed on Forest Service owned, operated, and contracted aircraft. To effectively perform these responsibilities, inspectors must ensure that thorough Pre-Use Inspections are performed and proactively conduct surveillance of aircraft maintenance operations to fulfill the assurance element of the Agency's Safety Management System (SMS) program. This chapter presents the Airworthiness Branch Quality Assurance Strategy for accomplishing these goals.

For contracted aircraft, the primary means of ensuring the safety of Forest Service operations is by conducting thorough Contract Pre-Use Inspections before an aircraft begins operating and then providing ongoing oversight of contractor maintenance. An important element of the oversight function consists of in-depth Field and Facility Audits during use. For Forest Service owned and operated aircraft (WCF), audits to ensure compliance with Forest Service policy are the focus. The key component in accomplishing both these functions is the Aircraft Inspector. It is essential that Aircraft Inspectors are proficient and knowledgeable of policy, contractual, regulatory and manufacturer's requirements to ensure the quality of inspections and oversight of maintenance operations. A sound Quality Assurance program will help ensure these objectives.

Regional maintenance managers should adapt the procedures in this chapter to their own regional programs and may request assistance from the Airworthiness Branch in setting up a similar program for auditing regional aviation assets.

The plan encompasses seven program areas:

1. Aircraft Inspector Proficiency.
2. Working Capital Fund (WCF) Aircraft.
3. Light Fixed-Wing Aircraft.
4. Helicopters.
5. Airtankers/Scoopers.
6. Smokejumper Aircraft.
7. Unmanned Aircraft Systems (UAS)

Each section contains an audit plan representing the minimum number of audits by area considered necessary to assure operational safety.

13-2 Airworthiness Branch Policy and Procedures

To fulfill the responsibility for providing initial approval of contracted aircraft, and ongoing oversight of maintenance being performed on WCF aircraft, inspectors will actively conduct surveillance of aircraft and maintenance operations. The procedures for accomplishing these goals are laid out in this chapter as defined by Forest Service SMS policy and IS-BAO best practices.

Airworthiness Branch auditors will be designated by the Airworthiness Branch Chief. The prerequisites for selection as an auditor are: approval as an Aircraft Inspector and IS-BAO Auditor accreditation (may be temporarily waved based on alternate training and experience as approved by the Airworthiness Branch Chief. Waving of this requirement will not be indefinite, if you expect to regularly perform audits, you must acquire IS-BAO accreditation). An auditor may be designated for only those aircraft they are approved for on the USFS Approved Inspectors List (MAA/MHA). Audits of ASIs will be performed only by WO Airworthiness Branch personnel.

Auditors will use Airworthiness Branch job aids when performing audits. Contact the Airworthiness Branch for the latest job aid revisions. These are not intended to be all inclusive. Depending on the time available and the intent of the audit, only select sections may be addressed.

Auditors will coordinate with regional management when auditing inspectors and aircraft based/operating in the Regions. The same principle applies to aircraft assigned to an incident. Coordination with Regional, incident management, CO, and CORs is mandatory to ensure cooperation and avoid conflicts.

Audits will be conducted to minimize impact on operations. The only time an operation should be terminated because of an audit is when a clear safety of flight issue arises. At all other times, auditors should work with Regional and incident officials, the CO, and the operator to resolve issues at the lowest level to limit impact on operations.

A team approach with Operations, Safety, etc., while not essential, should be taken whenever possible during Contractor Field and Facility Audits. However, the principal goal of the Airworthiness Branch QA strategy is to provide the maximum level of ongoing oversight consistent with the personnel and assets available. This goal should not be compromised for the convenience of a team approach.

Auditors should encourage Regional ASIs to participate in Contractor Field and Facility Audits conducted in their Region.

For a flow chart of the Pre-Use Inspection process, see the Pre-Use Inspection Flow Diagram in Chapter 11.

Contractor Field and Facility Audits will sample the subject areas listed in the figure below and will focus on contractual and safety issues, with an emphasis on promoting compliance with industry best practices. The International Standard for Business Aircraft Operations (IS-BAO) is the benchmark that will be used to evaluate best practices. Gaps should be identified and brought to the attention of operators and users for resolution. Improvements to contractual specifications and operational issues should be the goal of any audit. While not required, a general airworthiness check of aircraft should be conducted whenever aircraft are available. Depending on the time available and the intent of the oversight, only select sections may be addressed.

Figure 13-1: Field and Facility Areas Subject to Audit

No.	Area Subject to Audit
1	Certificate and Operations Specifications
2	Management, Control, and Administration
3	Quality Assurance
4	Manuals
5	Training
6	Records System
7	Facilities (Repair Stations only)
8	Contract Maintenance
9	Maintenance Performed at Other Locations (Repair Stations only)
10	Technical Data
11	Inspection System (Repair Stations only)
12	Special Tools
13	Aircraft Maintenance and Inspection Status
14	Aircraft Physical Inspection
15	Occupational Health and Safety

Auditors must out-brief contractor, Regional, and incident management at the completion of audits as applicable. Additionally, audit reports shall be completed and filed with the Airworthiness Branch and Contracting Officer with recommended

remedial/follow-up actions to be performed. See Chapter 12 for detailed description of the various oversight programs.

13-3 Aircraft Inspector Proficiency

Auditing an ASI's proficiency encompasses two principal areas: training and over-the-shoulder audits. Maintaining minimum training requirements is the responsibility of the individual inspector. Minimum training requirements are listed in Chapter 3 and FSH 5709.16, 40. As an inspector, you are responsible to meet all training requirements. You must provide a record of training to the Airworthiness Branch when requested. Use the form provided in the Airworthiness Branch 5700 Shared Folder. Deficiencies will be brought to the attention of the inspector and their supervisor when noted.

The Airworthiness Branch conducts an annual Inspector Workshop at which inspectors are briefed on the latest developments in contractual, regulatory, manufacturer, and industry standard requirements. Attendance at the workshop is mandatory (FSH 5709.16, 40). If for any reason an inspector is unable to attend the workshop, the Airworthiness Branch Chief may offer an Alternative Means of Compliance which meets or exceeds this requirement on a case-by-case basis.

New Aircraft Inspectors receive extensive training and must complete a Task Book prior to being listed on the Aircraft Inspectors List. To ensure proficiency of Inspectors, all are audited during a Pre-Use Inspection at least once every five years. Chapter 11 contains a flow diagram of the tasks normally associated with a Pre-Use Inspection. Audits will evaluate an inspector's proficiency in performing the tasks shown in the flow diagram along with the appropriate Pre-Use Inspection Checklist. Inspectors are encouraged to perform a self-audit using the Job Proficiency Subject Areas list which can be obtained from the Airworthiness Branch.

RAOs may request additional audits for regional inspectors as needed.

Whenever possible, audits of ASIs should consist of an over-the-shoulder Pre-Use Inspection; however, scheduling conflicts may prevent this. Under these circumstances a thorough administrative review of the Pre-Use Inspection process will be done with the inspector being audited.

For planning purposes, approximately 20% of the Aircraft Inspector cadre will be audited annually. The audit schedule should be updated based on the principle of one audit per platform type every five years.

13-4 Working Capital Fund (WCF) Aircraft

Audits of WCF aircraft will be carried out at least once every five years. The Airworthiness Branch WCF Program Manager coordinates WCF audits. Audits will

determine whether aircraft are operated, maintained, and configured in accordance with Forest Service Handbook (FSH) 5709.16 and 14 Code of Federal Regulations (CFR). Regions operating WCF aircraft are required to participate in ARGUS International's PRISM Internal Evaluation Program (IEP), since a strong IEP should identify any deficiencies long before a National audit.

The audit schedule will ensure that every WCF aircraft is audited at least once every five years. For planning purposes an average of 20% of the Regional WCF aircraft will be audited annually.

Figure 13-2: PRISM IEP Maintenance Checklists

ID	Description
Mx 1	Maintenance Management
Mx 2	Maintenance Personnel
Mx 3	Quality Assurance
Mx 4	Inspection
Mx 5	Maintenance Training
Mx 6	Maintenance Control/Planning
Mx 7	Aircraft Condition
Mx 8	Maintenance Records
Mx 9	Fueling and Servicing
Mx 10	Maintenance Manuals
Mx 11	Facilities
Mx 12	Stores/Shelf-Life

13-5 Helicopters

13-5-1 Audit Objectives and Scheduling

For scheduling purposes 25-30% of the Exclusive-Use (EU) contracted helicopters will be targeted for contract compliance audits annually. EU helicopters will be scheduled during their Mandatory Availability Period (MAP). While it may not always be possible due to the complex, dynamic nature of wildland fire and aviation operations, the intent of this schedule is to ensure that each EU helicopter is audited at a minimum of once in every five-year contract cycle. The fifth year of the contract cycle should be used to "catch-up" and/or to seek targets based on Key Performance Indicators (KPI's) and trends identified by previous audits. Due to the nature of Call-When-Needed

(CWN)Helicopters, a targeted percentage is not advisable. However, when CWN helicopters are available, they should be audited when possible, depending on operational need, audit trends, make/model particulars, company and tail number specifics, and geographic considerations of the audit schedule.

13-5-2 Special Mission Programs

Special Mission Aircraft such as Rappel, Short-haul, Aerial Supervision, Night Operations, etc. will have additional operational oversight required by their respective program management. These programs have established goals that are separate from the goals stated here; however, it is expected that the Airworthiness Branch participate in these audits with consideration given to their operational focus. While you will need to adjust the flow of these audits to accommodate the operational perspective, it is expected that the integrity and content of the Airworthiness portion remains the same. Moreover, when a contract compliance audit is scheduled during an operational special mission audit, it is critical to work with the operations representative to ensure that the general airworthiness check portion of the contract compliance is completed prior to any flights occurring for the operational assessment. It is appropriate to use these audits to meet the targets previously stated.

13-5-3 Regional Support

Regions are expected to participate in the national contract compliance and oversight program as well as develop regional audit schedules in support of the overall goals. Regional audit and oversight programs are focused on Exclusive-Use Type III helicopters within their respective region but should include all aircraft types. Regional audit programs should be developed in coordination with the Airworthiness Branch.

13-6 Airtankers/Scoopers/Smokejumper

13-6-1 Scheduling

For scheduling purposes 25-30% of the contracted Airtankers, Scoopers and Smoke-Jumper aircraft will be targeted for contract compliance audits annually. Exclusive use aircraft will be scheduled during their Mandatory Availability Period (MAP). This schedule will ensure that each aircraft is audited at a minimum of once in every five-year contract cycle. The fifth year of the contract cycle should be used to “catch-up” and/or to seek targets based on Key Performance Indicators (KPI’s) identified during inspections performed during the previous four years. The schedule should be based on targeting Exclusive-Use aircraft with Call-When-Needed aircraft added based on operational need and geographic considerations of the inspection schedule; to include mitigation of travel risks and extended work schedules.

The schedule strategy articulated above is the basis for developing an intended schedule each year. These schedules should be flexible and adjusted as operations

change and aircraft are positioned throughout the country. If an intended target cannot be obtained, it is acceptable and encouraged to inspect a different aircraft and operation at the originally intended location (Targets of Opportunity).

In developing the schedule each season, the attention should be given to gaining access to a variety of air crews as well as individual aircraft. A singular focus on specific tail numbers will not provide the depth of understanding for implementation of required programs that interact with a variety of aircrews will.

13-7 Light Fixed Wing

Audits of all Light Fixed Wing aircraft operating for the USFS will be managed by the individual regions in which they operate. The audit schedule for these aircraft will be developed by the respective regions based on operational tempo, trends and areas of concern developed within the host region with input from the Airworthiness Branch as is determined necessary. As a goal, each region should audit 20-30% of the contracted aircraft within the region each year. The Airworthiness Branch develops and maintains job aids for use in performing audits of these aircraft which are available in the Airworthiness Branch 5700 Shared Folder. Once completed, the job aids and supporting documentation shall be provided to the airworthiness branch via the shared folder.

13-8 Airworthiness Branch Checklists and Job Aids

This section lists currently approved Pre-Use Checklists and Audit Job Aids. Contact the Airworthiness Branch for the latest version.

13-8-1 Pre-Use Inspection Checklists (AvCheck)

1. Light Fixed Wing.
2. Airtanker.
3. Smokejumper
4. Helicopter.
5. Fuel Service Vehicles

13-8-2 Audit Job Aids

Audit Job Aids are available in initial and recurring formats. Initial Audit Job Aids are geared toward an in-depth audit of new vendors and their programs, with an emphasis on their policies and processes. Recurring Audit Job Aids are more appropriate for aircraft during contract “option” years with the focus on continuing performance.

Current versions of program specific job aids can be found in the Airworthiness Branch 5700 Shared drive.

Airtanker QA Field Maintenance

Helicopter QA Field Maintenance

LFW QA Field Maintenance

Repair Station QA Audit

Smoke Jumper QA Field Maintenance

Regional WCF QA Audit

13-8-3 Quality Assurance Procedural Checklist

Figure 13-3: Quality Assurance Procedural Checklist

	Task	Initial
1	Determine aircraft / individuals to be audited.	
2	Research contractual requirements, as applicable.	
3	Research regulatory and maintenance requirements, as applicable.	
4	Coordinate with appropriate individuals (Regional and/or incident managers, COs, CORs).	
5	Coordinate with other team members, as applicable.	
6	Complete audit.	
7	Perform critique and make recommendations.	
8	Out-brief managers, as applicable.	
9	Document audit findings. Upload job aids and supporting documentation to Airworthiness Branch 5700 Shared folder.	
10	Follow-up on corrective actions.	
11	Feedback and make recommendations on policy and process changes.	

Appendix A – Special Missions

This appendix provides a brief summary of special missions within the Forest Service.

A-1 Fixed-Wing Aircraft Missions

A-1-1 Multi-engine Airtanker Mission

The aircraft is used to deliver fire retardant (a chemical mixture that helps to suppress fire) to a wildfire from an airtanker base by means of a fixed tank that is attached to or built into the aircraft. The retardant is usually dropped from a height of 200 feet above the fire. Type 1 Airtankers deliver 3000 to 5000 gallons. Type 2 Airtankers deliver 1800 to 2999 gallons. Very Large Airtankers (VLAT) deliver over 8000 gallons.

A-1-2 Aerial Supervision Module (ASM) Mission

An Aerial Supervision Module consists of an Air Tactical Pilot (ATP) and an Air Tactical Supervisor (ATS), both trained specifically for the ASM mission.

Leadplane. The leadplane mission directly supervises firefighting aircraft, usually airtankers dropping fire retardant. This is done to increase safety and efficiency over an incident. The leadplane mission consists of low-level runs to assess the terrain, entry and exit routes, visibility, turbulence, and location of ground firefighters. Ideally, this can be worked out in advance, and the arriving airtankers can drop their loads in a timely manner, reducing exposure to the low-level environment. The leadplane mission can also assume the functions of an Air Tactical Group Supervisor in their absence.

Aerial Supervision. As part of the ASM, the ATS supervises all other aircraft over a wildfire. This individual is in constant contact with ground firefighters and is also responsible for communicating with the local dispatch. The ATS is always an experienced firefighter and assists the Incident Commander and other personnel on the fire in formulating strategy and tactics in accordance with incident objectives.

A-1-3 Air Tactical Mission

A contract or Agency pilot qualified for aerial supervision and an Air Tactical Group Supervisor (ATGS) compose this mission. An ATGS supervises all other aircraft over a wildfire. This individual is in constant contact with ground firefighters and is also responsible for communicating with the local dispatch. The ATGS is always an experienced firefighter and assists the Incident Commander and other personnel on the fire in formulating strategy and tactics in accordance with incident objectives.

A-1-4 Infrared (IR) Mission (higher altitude, above 3000 feet)

IR fixed-wing aircraft conduct survey flights over wildfire incidents in order to accurately assess and map the fire's perimeter and to locate areas containing the most heat. These aircraft fly IR missions at night, and the information collected is available to the Incident Commander after the data is processed by interpreters on the ground and posted to a File Transfer Protocol (FTP) site. This information is especially useful for fires located in rugged and remote areas.

A-1-5 Smokejumper/Paracargo Mission

The aircraft launches at or near maximum takeoff weight, climbs to altitude and flies to the fire. Once the fire is located, the aircraft descends to approximately 1500 feet AGL. Once there, several orbits at shallow angle of bank may be done to locate smoke and jump spots.

Firefighter Delivery (Smokejumper). Once a fire is located and a jump spot is selected, descend for a low pass, (500 feet AGL) so jumpers get a close look at fire and jump spots. Climb back to 1500 feet AGL and complete several orbits to drop streamers to determine the wind line. After winds are determined, complete several more patterns at the same altitude to deliver smokejumpers. Usually, they exit two at a time, so gross weight changes by roughly 500 lbs. for each pass.

Paracargo. After all the jumpers are safely on the ground, cargo is dropped. These passes are done normally at 200 to 300 feet AGL. Each pass will deliver between 50 and 250 lbs. of cargo, depending on the airplane. After each pass, a climb will commence normally between 500 and 1500 feet AGL to set up for the next pass, with a descent on the final approach. After the last cargo drop, climb back to 1500 feet AGL and circle the fire to determine that jumper needs are met, and communications have been established. Climb back up to altitude and fly back to base for normal approach and landing.

A-1-6 Reconnaissance/Patrol/Survey

These flights are conducted to attempt to locate fires over large and remote areas. Aircraft can usually survey an entire forest or other area of responsibility in several hours, and fires are often discovered when they are small and can be easily attacked by ground and/or aerial resources. Other flights might include Forest Health Protection missions such as insect and disease surveys, aerial photography, and aerial application for disease or pest eradication.

A-2 Rotor-Wing Aircraft Missions

A-2-1 Water/Retardant Delivery (Fixed Tank)

The helicopter is used to deliver water or fire retardant (a chemical mixture that helps suppress fire) to a fire from a nearby water/retardant source by means of a tank that is attached to or built into the aircraft. The water or retardant is usually dropped from a height above the fire that minimizes the downwash from the aircraft.

A-2-2 Water/Retardant Delivery (Bucket)

The helicopter delivers water or retardant to a fire with a bucket (a container, usually cylinder shaped, which can take-on and release water or retardant by mechanical means). The bucket is suspended below the aircraft with cables attached to a quick release mechanism. The bucket can also be suspended on a longer cable (50 feet or more) to minimize the effect of downwash from the aircraft.

A-2-3 Helitack Mission

Helitack crewmembers are firefighters that are trained in operations with the helicopter. This training includes loading and unloading people and cargo, preparing and attaching external loads, and operational safety around helicopters.

Rappel. The delivery of firefighters to a fire area by helicopter when there is no suitable location to land the aircraft close to the fire. The firefighters descend on a rope that is attached to the aircraft and with a device that attaches to the rope and controls the rate of descent. Additional firefighting equipment is lowered from the helicopter to the firefighters on the ground.

Short Haul. The delivery of personnel or equipment to remote locations, often inaccessible by traditional means, using a longline suspended from the aircraft (Human External Cargo).

Aerial Ignition. The US Forest Service utilizes aerial ignition as a key tactic in wildland fire management, employing both traditional methods with helicopters and increasingly, with unmanned aircraft systems (UAS) like drones. Aerial ignition involves starting small, controlled fires to strategically reduce fuel loads and create containment lines during wildfires or for prescribed burns. UAS are particularly valuable for accessing difficult terrain and reducing risks associated with manned aircraft in dangerous situations.

Plastic Sphere Dispenser (PSD). A dispenser injects glycol into the plastic sphere/capsule, initiating an exothermic reaction, and then expels the primed sphere/capsule from the aircraft. The machine can be regulated to control the number of spheres/capsules being dispensed, establishing ignition patterns on

the ground. The machines were developed to provide a method of igniting ground fuels, in a short time, on large acreage, without causing undue damage to the over story.

Helitorch. The helitorch is a gelled fuel aerial ignition device that is attached to a helicopter's external cargo hook. The ignition and fuel feed are controlled by the pilot through a simple electrical connector on the belly of the helicopter, usually the water bucket plug. The complete system is jettisonable by the pilot in case of emergency. The Helitorch allows the aircraft to be flown higher and faster than in PSD operations.

Fire Crew Transport. The helicopter is used to transport firefighters to fires when access is limited by lack of roads or adverse terrain. To keep wildland fires small and suppression costs low, it is important to get firefighters to the scene as quickly as possible. Use of helicopters to transport personnel and equipment saves time and conserves energy of the firefighters for actual firefighting.

A-2-4 Cargo Delivery Mission

Internal Cargo. When there are areas near the fire that are large enough and clear of obstacles for the helicopter to land, the helicopter is internally loaded with food, water, tools and other firefighting equipment. This allows transportation of cargo at a higher airspeed while eliminating the hazard associated with external loads.

External Cargo. When firefighters are on the fire line or located in an area that is not open and clear of obstructions, the helicopter can deliver supplies by means of a cargo net and a cable attached to the helicopter (i.e., 50 feet or longer longline). This allows lowering of supplies to personnel while maintaining the helicopter's clearance from obstacles.

A-2-5 Helicopter Coordinator/Air Attack

The Helicopter Coordinator function is to provide mission directions to helicopters on a large fire with complex air operations and to provide separation between the helicopters as an added safety.

A-2-6 Sensor Equipped Operations

Sensor equipped helicopters have Electro-optical/Infrared (EO/IR) gimballed sensors and mission equipment installed to provide intelligence to fire operations. These aircraft are approved for Air Attack and used by Helicopter Coordinators.

Appendix B – Surplus Military Aircraft and Equipment

B-1 Introduction

Inspectors often encounter equipment that is used exclusively for firefighting. Depending on the inspector's background, some of it may be familiar. This appendix provides some general information on some of the more common pieces of equipment used in helicopters. Much of the special firefighting equipment covered in this chapter is used under the authority of 14 CFR Part 133 – External Load Operations. Definitions of the various classes of external load operations can be found in the Glossary.

B-2 Restricted Category – Surplus Military Helicopters

Numerous older surplus military aircraft have been made available in the civilian market. At first, these surplus aircraft only went to government agencies under Federal Excess Personal Property (FEPP) Program, mostly state and local governments. Today, more and more of these surplus aircraft are being certificated under Restricted Category Type Certificates (TC). The majority of these surplus aircraft come from the U.S. Army The CH-47 as well as UH-60 are very popular with vendors due to large payload capacities and availability. The CH-46 has not made a strong appearance as a firefighting platform due to low payload capacity.

Helicopters(s) which are configured from surplus military aircraft, which have FAA type certificates based upon military operation (in lieu of manufacturers' type certificate) shall have, at the time of certification all applicable technical directives accomplished. This includes Time Compliance Technical Orders (TCTO's), all military messages (ASAM's, AMAM's, SOF's), etc.

Additionally, in compliance with the Federal Management Regulation 102-33.170 and the recommendation in FAA Restricted Category Type Certification Order 8110.56B, messages, bulletins etc., released by the military shall have the requirements reviewed and accomplished if the same condition exists after the original FAA type certification of former military aircraft while under contract to the Forest Service.

Besides the usual ADs that the FAA issues on aircraft, the military releases its own form of airworthiness directive. Only the Army directives will be mentioned here, but other military service directives may apply also. Depending on how the aircraft was certificated, compliance may be required with FAA Airworthiness Directives, the Military Safety of Flights message (SOF), Aviation Safety Action Message (ASAM), and Aviation Maintenance Action Message (AMAM)

B-3 Engine Health

Health Indicator Test (HIT). The HIT is the method by which the pilot, in day to day flying, monitors the aircraft engine condition. This check is performed prior to the first flight of the day. It is also known as a Performance Check. The HIT check data is based on information established from the aircraft topping check and TEAC check.

Turbine Engine Analysis Check (TEAC). The purpose of the TEAC check is to systematically check and verify engine/aircraft indicating systems and overall engine performance. The TEAC and topping check together establish a performance baseline which can be used to check engine performance.

Power Checks. Power checks are used to see how much torque the aircraft engine will produce without exceeding engine limitations. Each civilian and military aircraft manufacturer has its own way of performing and recording these checks. Refer to the Aircraft Flight Manual and Aircraft Maintenance Manual for power check parameters.

Appendix C – Websites

C-1 Forest Service

C-1-1 Policy Manuals

https://www.fs.usda.gov/about-agency/regulations-policies/national-directives/

C-1-2 Pinyon (Box)

https://usfs.app.box.com/

C-1-3 PRISM

https://prismsms.argus.aero/

C-1-4 AvCheck

https://egp.wildfire.gov/avcheck/

C-1-5 DAU

https://dau.csod.com/

C-2 Interagency

C-2-1 Automated Flight Following (AFF)

https://www.aff.gov/

C-2-2 NIFC

https://www.nifc.gov/

C-2-3 Contract Documents

https://www.nifc.gov/resources/NIICD/niicd-documents/

C-2-4 NWCG Guides

https://www.nwcg.gov/nwcg-publication-catalog/

C-2-5 SAFECOM

https://www.safecom.gov/

C-2-6 Interagency Helicopter MOU

https://www.doi.gov/aviation/library/mou

C-3 FAA

https://www.faa.gov/

C-3-1 Dynamic Regulatory System (DRS)

https://drs.faa.gov/

C-3-2 Electronic Document Retrieval System (EDRS) (337's)

https://aircraft.faa.gov/ardocs/

C-3-3 FAA Academy Courses

https://www.faa.gov/training_testing/faa_academy/catalog/

C-3-4 FAA Safety Team (FAAST)

https://www.faasafety.gov/

C-3-5 IA Renewal

https://iacra.faa.gov/IACRA/Default.aspx

C-4 Other References

C-4-1 NFPA

https://www.nfpa.org/

C-4-2 RTCA

Create your own account. Use U.S. Dept. of Agriculture Forest Service for your company.

https://www.rtca.org/

C-4-3 ASTM

Visit on FS Network or VPN for automatic access to documents

https://compass.astm.org/

C-4-4 Management of Government Aircraft (FMR 102-33)

https://www.ecfr.gov/current/title-41/subtitle-C/chapter-102

Appendix D – Guidance Information

D-1 National Transportation and Safety Board (NTSB)

Title 49, Chapter VIII

Part 830, Notification and Reporting of Aircraft Accidents or Incidents

Part 831, Accident/Incident Investigation Procedures

Aircraft accident means an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage.

Aircraft Incident as an occurrence other than an accident, associated with the operation of an aircraft, which affects or could affect the safety of operations. Operators should review the full list of reportable incidents,

Serious injury means any injury in which any of the following apply:

1. Requires hospitalization for more than 48 hours;
2. Results in a fracture of any bone (except simple fractures of fingers, toes, or nose);
3. Causes severe hemorrhages, nerve, muscle, or tendon damage;
4. Involves any internal organ; or
5. Involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.

Substantial damage means damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage" for the purpose of this part.

D-2 FAA Orders

An FAA Order is a directive that the FAA uses to issue policy, instructions and work information to its own personnel and designees. It spells out how the FAA expects its employees to carry out their responsibilities. The following list has been compiled as reference to allow Inspectors to quickly obtain background information on topics commonly encountered throughout the course of their duties; it is not all inclusive.

Figure D-1: Useful FAA Orders for Agency Inspectors

Order No.	Description
8020.11D	Aircraft Accident and Incident Notification, Investigation and Reporting.
8110.4C	Type Certification Process.
8110.56B	Restricted Category Type Certification.
8110.54A	Instructions for Continued Airworthiness.
8120.16A	Suspected Unapproved Parts Programs.
8130.2K	Airworthiness Certification of Aircraft (and registration).
8150.1D	Technical Standard Order Program.
8620.2B	Applicability and Enforcement of Manufacturer's Data.
8900.1A	Flight Standards Information Management System (FSIMS).

Order 8900.1, Flight Standards Information Management System (FSIMS), is the Order that FAA Aviation Safety Inspectors (ASI) use. It is available online at the FAA Dynamic Regulatory System.

Appendix E – Air Transportation Association (ATA) Chapters

E-1 Introduction

The Air Transportation Association (ATA) numbering system is a common referencing standard for all commercial aircraft documentation. The standard numbering system was published by the Air Transport Association on June 1, 1956.

The Joint Aircraft System/Component (JASC) Code Table is a modified version of the ATA code developed by the FAA. This code uses a four-digit format, along with an abbreviated code title. The first two digits of the JASC code correspond to the ATA system.

A unique aspect of the chapter numbers is their relevance for all aircraft. Thus, a chapter reference number for a Boeing 747 will be the same for other Boeing aircraft, a BAe 125, and Airbus Aircraft. Examples of this include Oxygen (Chapter 35), Electrical Power (Chapter 24), and Doors (Chapter 52).

When using ATA codes for AvCheck RTCA, it is preferrable to be as specific as possible; however, general codes are acceptable when a more specific code is not appropriate (start detailed then go generic).

E-2 ATA/JASC Codes

AIRCRAFT SYSTEMS

11 PLACARDS AND MARKINGS

1100 PLACARDS AND MARKINGS

12 SERVICING

1210 FUEL SERVICING
1220 OIL SERVICING
1230 HYDRAULIC FLUID SERVICING
1240 COOLANT SERVICING

14 HARDWARE

1400 MISCELLANEOUS HARDWARE
1410 HOSES AND TUBES
1420 ELECTRICAL CONNECTORS
1430 FASTENERS
1497 MISCELLANEOUS WIRING

18 HELICOPTER VIBRATION

1800 HELICOPTER VIB/NOISE ANALYSIS
1810 HELICOPTER VIBRATION ANALYSIS
1820 HELICOPTER NOISE ANALYSIS
1897 HELICOPTER VIBRATION SYSTEM WIRING

AIRFRAME SYSTEMS

21 AIR CONDITIONING

2100 AIR CONDITIONING SYSTEM
2110 CABIN COMPRESSOR SYSTEM
2120 AIR DISTRIBUTION SYSTEM
2121 AIR DISTRIBUTION FAN
2130 CABIN PRESSURE CONTROL SYSTEM
2131 CABIN PRESSURE CONTROLLER
2132 CABIN PRESSURE INDICATOR
2133 PRESSURE REGUL/OUTFLOW VALVE
2134 CABIN PRESSURE SENSOR
2140 HEATING SYSTEM
2150 CABIN COOLING SYSTEM
2160 CABIN TEMPERATURE CONTROL SYSTEM
2161 CABIN TEMPERATURE CONTROLLER
2162 CABIN TEMPERATURE INDICATOR
2163 CABIN TEMPERATURE SENSOR
2170 HUMIDITY CONTROL SYSTEM
2197 AIR CONDITIONING SYSTEM WIRING

22 AUTO FLIGHT

2200 AUTO FLIGHT SYSTEM

2210 AUTOPILOT SYSTEM
2211 AUTOPILOT COMPUTER
2212 ALTITUDE CONTROLLER
2213 FLIGHT CONTROLLER
2214 AUTOPILOT TRIM INDICATOR
2215 AUTOPILOT MAIN SERVO
2216 AUTOPILOT TRIM SERVO
2220 SPEED-ATTITUDE CORRECT. SYSTEM
2230 AUTO THROTTLE SYSTEM
2250 AERODYNAMIC LOAD ALLEVIATING
2297 AUTOFLIGHT SYSTEM WIRING

23 COMMUNICATIONS

2300 COMMUNICATIONS SYSTEM
2310 HF COMMUNICATION SYSTEM
2311 UHF COMMUNICATION SYSTEM
2312 VHF COMMUNICATION SYSTEM
2320 DATA TRANSMISSION AUTO CALL
2330 ENTERTAINMENT SYSTEM
2340 INTERPHONE/PASSENGER PA SYSTEM
2350 AUDIO INTEGRATING SYSTEM
2360 STATIC DISCHARGE SYSTEM
2370 AUDIO/VIDEO MONITORING
2397 COMMUNICATION SYSTEM WIRING

24 ELECTRICAL POWER

2400 ELECTRICAL POWER SYSTEM
2410 ALTERNATOR-GENERATOR DRIVE
2420 AC GENERATION SYSTEM
2421 AC GENERATOR-ALTERNATOR
2422 AC INVERTER
2423 PHASE ADAPTER
2424 AC REGULATOR
2425 AC INDICATING SYSTEM
2430 DC GENERATING SYSTEM
2431 BATTERY OVERHEAT WARN. SYSTEM
2432 BATTERY/CHARGER SYSTEM
2433 DC RECTIFIER/CONVERTER
2434 DC GENERATOR-ALTERNATOR
2435 STARTER-GENERATOR
2436 DC REGULATOR
2437 DC INDICATING SYSTEM
2440 EXTERNAL POWER SYSTEM
2450 AC POWER DISTRIBUTION SYSTEM
2460 DC POWER/DISTRIBUTION SYSTEM
2497 ELECTRICAL POWER SYSTEM WIRING

25 EQUIPMENT/FURNISHINGS

2500 CABIN EQUIPMENT/FURNISHINGS
2510 FLIGHT COMPARTMENT EQUIPMENT
2520 PASSENGER COMPARTMENT EQUIPMENT
2530 BUFFET/GALLEYS
2540 LAVATORIES
2550 CARGO COMPARTMENTS
2551 AGRICULTURAL SPRAY SYSTEM
2560 EMERGENCY EQUIPMENT
2561 LIFE JACKET
2562 EMERGENCY LOCATOR BEACON
2563 PARACHUTE
2564 LIFE RAFT
2565 ESCAPE SLIDE
2570 ACCESSORY COMPARTMENT
2571 BATTERY BOX STRUCTURE
2572 ELECTRONIC SHELF SECTION
2597 EQUIP/FURNISHING SYSTEM WIRING

26 FIRE PROTECTION

2600 FIRE PROTECTION SYSTEM
2610 DETECTION SYSTEM
2611 SMOKE DETECTION
2612 FIRE DETECTION
2613 OVERHEAT DETECTION
2620 EXTINGUISHING SYSTEM
2621 FIRE BOTTLE, FIXED
2622 FIRE BOTTLE, PORTABLE
2697 FIRE PROTECTION SYSTEM WIRING

27 FLIGHT CONTROLS

2700 FLIGHT CONTROL SYSTEM
2701 CONTROL COLUMN SECTION
2710 AILERON CONTROL SYSTEM
2711 AILERON TAB CONTROL SYSTEM
2720 RUDDER CONTROL SYSTEM
2721 RUDDER TAB CONTROL SYSTEM
2722 RUDDER ACTUATOR
2730 ELEVATOR CONTROL SYSTEM
2731 ELEVATOR TAB CONTROL SYSTEM
2740 STABILIZER CONTROL SYSTEM
2741 STABILIZER POSITION INDICATING
2742 STABILIZER ACTUATOR
2750 TE FLAP CONTROL SYSTEM
2751 TE FLAP POSITION IND. SYSTEM
2752 TE FLAP ACTUATOR
2760 DRAG CONTROL SYSTEM
2761 DRAG CONTROL ACTUATOR
2770 GUST LOCK/DAMPER SYSTEM

2780 LE SLAT CONTROL SYSTEM
2781 LE SLAT POSITION IND. SYSTEM
2782 LE SLAT ACTUATOR
2797 FLIGHT CONTROL SYSTEM WIRING

28 FUEL

2800 AIRCRAFT FUEL SYSTEM
2810 FUEL STORAGE
2820 ACFT FUEL DISTRIB. SYSTEM
2821 ACFT FUEL FILTER/STRAINER
2822 FUEL BOOST PUMP
2823 FUEL SELECTOR/SHUT-OFF VALVE
2824 FUEL TRANSFER VALVE
2830 FUEL DUMP SYSTEM
2840 ACFT FUEL INDICATING SYSTEM
2841 FUEL QUANTITY INDICATOR
2842 FUEL QUANTITY SENSOR
2843 FUEL TEMPERATURE INDICATOR
2844 FUEL PRESSURE INDICATOR
2897 FUEL SYSTEM WIRING

29 HYDRAULIC POWER

2900 HYDRAULIC POWER SYSTEM
2910 HYDRAULIC SYSTEM, MAIN
2911 HYDRAULIC POWER ACCUMULATOR, MAIN
2912 HYDRAULIC FILTER, MAIN
2913 HYDRAULIC PUMP, (ELECT/ENG), MAIN
2914 HYDRAULIC HANDPUMP, MAIN
2915 HYDRAULIC PRESSURE RELIEF VLV, MAIN
2916 HYDRAULIC RESERVOIR, MAIN
2917 HYDRAULIC PRESSURE REGULATOR, MAIN
2920 HYDRAULIC SYSTEM, AUXILIARY
2921 HYDRAULIC ACCUMULATOR, AUXILIARY
2922 HYDRAULIC FILTER, AUXILIARY
2923 HYDRAULIC PUMP, AUXILIARY
2925 HYDRAULIC PRESSURE RELIEF, AUXILIARY
2926 HYDRAULIC RESERVOIR, AUXILIARY
2927 HYDRAULIC PRESSURE REGULATOR, AUX.
2930 HYDRAULIC INDICATING SYSTEM
2931 HYDRAULIC PRESSURE INDICATOR
2932 HYDRAULIC PRESSURE SENSOR
2933 HYDRAULIC QUANTITY INDICATOR
2934 HYDRAULIC QUANTITY SENSOR
2997 HYDRAULIC POWER SYSTEM WIRING

30 ICE AND RAIN PROTECTION

3000 ICE/RAIN PROTECTION SYSTEM
3010 AIRFOIL ANTI/DE-ICE SYSTEM
3020 AIR INTAKE ANTI/DE-ICE SYSTEM
3030 PITOT/STATIC ANTI-ICE SYSTEM
3040 WINDSHIELD/DOOR RAIN/ICE REMOVAL
3050 ANTENNA/RADOME ANTI-ICE/DE-ICE SYSTEM
3060 PROP/ROTOR ANTI-ICE/DE-ICE SYSTEM
3070 WATER LINE ANTI-ICE SYSTEM
3080 ICE DETECTION
3097 ICE/RAIN PROTECTION SYSTEM WIRING

31 INSTRUMENTS

3100 INDICATING/RECORDING SYSTEM
3110 INSTRUMENT PANEL
3120 INDEPENDENT INSTRUMENTS (CLOCK, ETC.)
3130 DATA RECORDERS (FLT/MAINT)
3140 CENTRAL COMPUTERS (EICAS)
3150 CENTRAL WARNING
3160 CENTRAL DISPLAY
3170 AUTOMATIC DATA
3197 INSTRUMENT SYSTEM WIRING

32 LANDING GEAR

3200 LANDING GEAR SYSTEM
3201 LANDING GEAR/WHEEL FAIRING
3210 MAIN LANDING GEAR
3211 MAIN LANDING GEAR ATTACH SECTION
3212 EMERGENCY FLOTATION SECTION
3213 MAIN LANDING GEAR STRUT/AXLE/TRUCK
3220 NOSE/TAIL LANDING GEAR
3221 NOSE/TAIL LANDING GEAR ATTACH SECTION
3222 NOSE/TAIL LANDING GEAR STRUT/AXLE
3230 LANDING GEAR RETRACT/EXTEND SYSTEM
3231 LANDING GEAR DOOR RETRACT SECTION
3232 LANDING GEAR DOOR ACTUATOR
3233 LANDING GEAR ACTUATOR
3234 LANDING GEAR SELECTOR
3240 LANDING GEAR BRAKE SYSTEM
3241 BRAKE ANTI-SKID SECTION
3242 BRAKE
3243 MASTER CYLINDER/BRAKE VALVE
3244 TIRE
3245 TIRE TUBE
3246 WHEEL/SKI/FLOAT
3250 LANDING GEAR STEERING SYSTEM
3251 STEERING UNIT
3252 SHIMMY DAMPER

3260 LANDING GEAR POSITION AND WARNING
3270 AUXILIARY GEAR (TAIL SKID)
3297 LANDING GEAR SYSTEM WIRING

33 LIGHTS

3300 LIGHTING SYSTEM
3310 FLIGHT COMPARTMENT LIGHTING
3320 PASSENGER COMPARTMENT LIGHTING
3330 CARGO COMPARTMENT LIGHTING
3340 EXTERIOR LIGHTING
3350 EMERGENCY LIGHTING
3397 LIGHT SYSTEM WIRING

34 NAVIGATION

3400 NAVIGATION SYSTEM
3410 FLIGHT ENVIRONMENT DATA
3411 PITOT/STATIC SYSTEM
3412 OUTSIDE AIR TEMP. IND./SENSOR
3413 RATE OF CLIMB INDICATOR
3414 AIRSPEED/MACH INDICATOR
3415 HIGH SPEED WARNING
3416 ALTIMETER, BAROMETRIC/ENCODER
3417 AIR DATA COMPUTER
3418 STALL WARNING SYSTEM
3420 ATTITUDE AND DIRECTION DATA SYSTEM
3421 ATTITUDE GYRO AND IND. SYSTEM
3422 DIRECTIONAL GYRO AND IND. SYSTEM
3423 MAGNETIC COMPASS
3424 TURN AND BANK/RATE OF TURN INDICATOR
3425 INTEGRATED FLT. DIRECTOR SYSTEM
3430 LANDING AND TAXI AIDS
3431 LOCALIZER/VOR SYSTEM
3432 GLIDE SLOPE SYSTEM
3433 MICROWAVE LANDING SYSTEM
3434 MARKER BEACON SYSTEM
3435 HEADS UP DISPLAY SYSTEM
3436 WIND SHEAR DETECTION SYSTEM
3440 INDEPENDENT POS. DETERMINING SYSTEM
3441 INERTIAL GUIDANCE SYSTEM
3442 WEATHER RADAR SYSTEM
3443 DOPPLER SYSTEM
3444 GROUND PROXIMITY SYSTEM
3445 AIR COLLISION AVOIDANCE SYSTEM (TCAS)
3446 NON RADAR WEATHER SYSTEM
3450 DEPENDENT POSITION DETERMINING SYS
3451 DME/TACAN SYSTEM
3452 ATC TRANSPONDER SYSTEM
3453 LORAN SYSTEM
3454 VOR SYSTEM
3455 ADF SYSTEM
3456 OMEGA NAVIGATION SYSTEM
3457 GLOBAL POSITIONING SYSTEM
3460 FLT MANAGE. COMPUTING HARDWARE SYS
3461 FLT MANAGE. COMPUTING SOFTWARE SYS
3497 NAVIGATION SYSTEM WIRING

35 OXYGEN

3500 OXYGEN SYSTEM
3510 CREW OXYGEN SYSTEM
3520 PASSENGER OXYGEN SYSTEM
3530 PORTABLE OXYGEN SYSTEM
3597 OXYGEN SYSTEM WIRING

36 PNEUMATIC

3600 PNEUMATIC SYSTEM
3610 PNEUMATIC DISTRIBUTION SYSTEM
3620 PNEUMATIC INDICATING SYSTEM
3697 PNEUMATIC SYSTEM WIRING

37 VACUUM

3700 VACUUM SYSTEM
3710 VACUUM DISTRIBUTION SYSTEM
3720 VACUUM INDICATING SYSTEM
3797 VACUUM SYSTEM WIRING

38 WATER/WASTE

3800 WATER AND WASTE SYSTEM
3810 POTABLE WATER SYSTEM
3820 WASH WATER SYSTEM
3830 WASTE DISPOSAL SYSTEM
3840 AIR SUPPLY (WATER PRESS. SYSTEM)
3897 WATER/WASTE SYSTEM WIRING

45 CENTRAL MAINT. SYSTEM

4500 CENTRAL MAINT. COMPUTER
4597 CENTRAL MAINT. SYSTEM WIRING

49 AIRBORNE AUXILIARY POWER

4900 AIRBORNE APU SYSTEM
4910 APU COWLING/CONTAINMENT
4920 APU CORE ENGINE
4930 APU ENGINE FUEL AND CONTROL
4940 APU START/IGNITION SYSTEM
4950 APU BLEED AIR SYSTEM
4960 APU CONTROLS

4970 APU INDICATING SYSTEM
4980 APU EXHAUST SYSTEM
4990 APU OIL SYSTEM
4997 APU SYSTEM WIRING

51 STANDARD PRACTICES/STRUCTURES

5100 STANDARD PRACTICES/STRUCTURES
5101 AIRCRAFT STRUCTURES
5102 BALLOON REPORTS

52 DOORS

5200 DOORS
5210 PASSENGER/CREW DOORS
5220 EMERGENCY EXITS
5230 CARGO/BAGGAGE DOORS
5240 SERVICE DOORS
5241 GALLEY DOORS
5242 E/E COMPARTMENT DOORS
5243 HYDRAULIC COMPARTMENT DOORS
5244 ACCESSORY COMPARTMENT DOORS
5245 AIR CONDITIONING COMPART. DOORS
5246 FLUID SERVICE DOORS
5247 APU DOORS
5248 TAIL CONE DOORS
5250 FIXED INNER DOORS
5260 ENTRANCE STAIRS
5270 DOOR WARNING SYSTEM
5280 LANDING GEAR DOORS
5297 DOOR SYSTEM WIRING

53 FUSELAGE

5300 FUSELAGE STRUCTURE (GENERAL)
5301 AERIAL TOW EQUIPMENT
5302 ROTORCRAFT TAIL BOOM
5310 FUSELAGE MAIN, STRUCTURE
5311 FUSELAGE MAIN, FRAME
5312 FUSELAGE MAIN, BULKHEAD
5313 FUSELAGE MAIN, LONGERON/STRINGER
5314 FUSELAGE MAIN, KEEL
5315 FUSELAGE MAIN, FLOOR BEAM
5320 FUSELAGE MISCELLANEOUS STRUCTURE
5321 FUSELAGE FLOOR PANEL
5322 FUSELAGE INTERNAL MOUNT STRUCTURE
5323 FUSELAGE INTERNAL STAIRS
5324 FUSELAGE FIXED PARTITIONS
5330 FUSELAGE MAIN, PLATE/SKIN
5340 FUSELAGE MAIN, ATTACH FITTINGS
5341 FUSELAGE, WING ATTACH FITTINGS
5342 FUSELAGE, STABILIZER ATTACH FITTINGS
5343 LANDING GEAR ATTACH FITTINGS
5344 FUSELAGE DOOR HINGES
5345 FUSELAGE EQUIPMENT ATTACH FITTINGS
5346 POWERPLANT ATTACH FITTINGS
5347 SEAT/CARGO ATTACH FITTINGS
5350 AERODYNAMIC FAIRINGS
5397 FUSELAGE WIRING

54 NACELLES/PYLONS

5400 NACELLE/PYLON STRUCTURE
5410 NACELLE/PYLON, MAIN FRAME
5411 NACELLE/PYLON, FRAME/SPAR/RIB
5412 NACELLE/PYLON, BULKHEAD/FIREWALL
5413 NACELLE/PYLON, LONGERON/STRINGER
5414 NACELLE/PYLON, PLATE SKIN
5415 NACELLE/PYLON, ATTACH FITTINGS
5420 NACELLE/PYLON MISCELLANEOUS STRUCT.
5497 NACELLE/PYLON SYSTEM WIRING

55 STABILIZERS

5500 EMPENNAGE STRUCTURE
5510 HORIZONTAL STABILIZER STRUCTURE
5511 HORIZONTAL STABILIZER, SPAR/RIB
5512 HORIZONTAL STABILIZER, PLATE/SKIN
5513 HORIZONTAL STABILIZER, TAB STRUCTURE
5514 HORIZ STAB MISCELLANEOUS STRUCTURE
5520 ELEVATOR STRUCTURE
5521 ELEVATOR, SPAR/RIB STRUCTURE
5522 ELEVATOR, PLATES/SKIN STRUCTURE
5523 ELEVATOR, TAB STRUCTURE
5524 ELEVATOR MISCELLANEOUS STRUCTURE
5530 VERTICAL STABILIZER STRUCTURE
5531 VERTICAL STABILIZER, SPAR/RIB STRUCT.
5532 VERTICAL STABILIZER, PLATES/SKIN
5533 VENTRAL STRUCTURE
5534 VERT. STAB. MISCELLANEOUS STRUCTURE
5540 RUDDER STRUCTURE
5541 RUDDER, SPAR/RIB
5542 RUDDER, PLATE/SKIN
5543 RUDDER, TAB STRUCTURE
5544 RUDDER MISCELLANEOUS STRUCTURE
5550 EMPENNAGE FLT. CONT., ATTACH FITTING
5551 HORIZONTAL STABILIZER, ATTACH FITTING
5552 ELEVATOR/TAB, ATTACH FITTINGS
5553 VERT. STAB., ATTACH FITTINGS
5554 RUDDER/TAB, ATTACH FITTINGS
5597 STABILIZER SYSTEM WIRING

56 WINDOWS

5600 WINDOW/WINDSHIELD SYSTEM
5610 FLIGHT COMPARTMENT WINDOWS
5620 PASSENGER COMPARTMENT WINDOWS
5630 DOOR WINDOWS
5640 INSPECTION WINDOWS
5697 WINDOW SYSTEM WIRING

57 WINGS

5700 WING STRUCTURE
5710 WING, MAIN FRAME STRUCTURE
5711 WING SPAR
5712 WING, RIB/BULKHEAD
5713 WING, LONGERON/STRINGER
5714 WING, CENTER BOX
5720 WING MISCELLANEOUS STRUCTURE
5730 WING, PLATES/SKINS
5740 WING, ATTACH FITTINGS
5741 WING, FUSELAGE ATTACH FITTINGS
5742 WING, NAC/PYLON ATTACH FITTINGS
5743 WING, LANDING GEAR ATTACH FITTINGS
5744 WING, CONT. SURFACE ATTACH FITTINGS
5750 WING, CONTROL SURFACES
5751 AILERONS
5752 AILERON TAB STRUCTURE
5753 TRAILING EDGE FLAPS
5754 LEADING EDGE DEVICES
5755 SPOILERS
5797 WING SYSTEM WIRING

PROPELLOR/ROTOR SYSTEMS

61 PROPELLERS/PROPULSORS

6100 PROPELLER SYSTEM
6110 PROPELLER ASSEMBLY
6111 PROPELLER BLADE SECTION
6112 PROPELLER DE-ICE BOOT SECTION
6113 PROPELLER SPINNER SECTION
6114 PROPELLER HUB SECTION
6120 PROPELLER CONTROLLING SYSTEM
6121 PROPELLER SYNCHRONIZER SECTION
6122 PROPELLER GOVERNOR
6123 PROPELLER FEATHERING/REVERSING
6130 PROPELLER BRAKING
6140 PROPELLER INDICATING SYSTEM
6197 PROPELLER/PROPULSORS SYSTEM WIRING

62 MAIN ROTOR

6200 MAIN ROTOR SYSTEM
6210 MAIN ROTOR BLADES
6220 MAIN ROTOR HEAD
6230 MAIN ROTOR MAST/SWASHPLATE
6240 MAIN ROTOR INDICATING SYSTEM
6297 MAIN ROTOR SYSTEM WIRING

63 MAIN ROTOR DRIVE

6300 MAIN ROTOR DRIVE SYSTEM
6310 ENGINE/TRANSMISSION COUPLING
6320 MAIN ROTOR GEARBOX
6321 MAIN ROTOR BRAKE
6322 ROTORCRAFT COOLING FAN SYSTEM
6330 MAIN ROTOR TRANSMISSION MOUNT
6340 ROTOR DRIVE INDICATING SYSTEM
6397 MAIN ROTOR DRIVE SYSTEM WIRING

64 TAIL ROTOR

6400 TAIL ROTOR SYSTEM
6410 TAIL ROTOR BLADES
6420 TAIL ROTOR HEAD
6440 TAIL ROTOR INDICATING SYSTEM
6497 TAIL ROTOR SYSTEM WIRING

65 TAIL ROTOR DRIVE

6500 TAIL ROTOR DRIVE SYSTEM
6510 TAIL ROTOR DRIVE SHAFT
6520 TAIL ROTOR GEARBOX
6540 TAIL ROTOR DRIVE INDICATING SYSTEM
6597 TAIL ROTOR DRIVE SYSTEM WIRING

67 ROTORS FLIGHT CONTROL

6700 ROTORCRAFT FLIGHT CONTROL
6710 MAIN ROTOR CONTROL
6711 TILT ROTOR FLIGHT CONTROL
6720 TAIL ROTOR CONTROL SYSTEM
6730 ROTORCRAFT SERVO SYSTEM
6797 ROTORS FLIGHT CONTROL SYSTEM WIRING

POWEPLANT SYSTEMS

71 POWERPLANT

7100 POWERPLANT SYSTEM
7110 ENGINE COWLING SYSTEM
7111 ENGINE COWL FLAPS
7112 ENGINE AIR BAFFLE SECTION

7120 ENGINE MOUNT SECTION
7130 ENGINE FIRESEALS
7160 ENGINE AIR INTAKE SYSTEM
7170 ENGINE DRAINS
7197 POWERPLANT SYSTEM WIRING

72 TURBINE/TURBOPROP ENGINE

7200 ENGINE (TURBINE/TURBOPROP)
7210 TURBINE ENGINE REDUCTION GEAR
7220 TURBINE ENGINE AIR INLET SECTION
7230 TURBINE ENGINE COMPRESSOR SECTION
7240 TURBINE ENGINE COMBUSTION SECTION
7250 TURBINE SECTION
7260 TURBINE ENGINE ACCESSORY DRIVE
7261 TURBINE ENGINE OIL SYSTEM
7270 TURBINE ENGINE BYPASS SECTION
7297 TURBINE ENGINE SYSTEM WIRING

73 ENGINE FUEL AND CONTROL

7300 ENGINE FUEL AND CONTROL
7310 ENGINE FUEL DISTRIBUTION
7311 ENGINE FUEL/OIL COOLER
7312 FUEL HEATER
7313 FUEL INJECTOR NOZZLE
7314 ENGINE FUEL PUMP
7320 FUEL CONTROLLING SYSTEM
7321 FUEL CONTROL/TURBINE ENGINES
7322 FUEL CONTROL/RECEIPROCATING ENGINES
7323 TURBINE GOVERNOR
7324 FUEL DIVIDER
7330 ENGINE FUEL INDICATING SYSTEM
7331 FUEL FLOW INDICATING
7332 FUEL PRESSURE INDICATING
7333 FUEL FLOW SENSOR
7334 FUEL PRESSURE SENSOR
7397 ENGINE FUEL SYSTEM WIRING

74 IGNITION

7400 IGNITION SYSTEM
7410 IGNITION POWER SUPPLY
7411 LOW TENSION COIL
7412 EXCITER
7413 INDUCTION VIBRATOR
7414 MAGNETO/DISTRIBUTOR
7420 IGNITION HARNESS (DISTRIBUTION)
7421 SPARK PLUG/IGNITER
7430 IGNITION/STARTER SWITCHING
7497 IGNITION SYSTEM WIRING

75 AIR

7500 ENGINE BLEED AIR SYSTEM
7510 ENGINE ANTI-ICING SYSTEM
7520 ENGINE COOLING SYSTEM
7530 COMPRESSOR BLEED CONTROL
7531 COMPRESSOR BLEED GOVERNOR
7532 COMPRESSOR BLEED VALVE
7540 BLEED AIR INDICATING SYSTEM
7597 ENGINE BLEED AIR SYSTEM WIRING

76 ENGINE CONTROLS

7600 ENGINE CONTROLS
7601 ENGINE SYNCHRONIZING
7602 MIXTURE CONTROL
7603 POWER LEVER
7620 ENGINE EMERGENCY SHUTDOWN SYSTEM
7697 ENGINE CONTROL SYSTEM WIRING

77 ENGINE INDICATING

7700 ENGINE INDICATING SYSTEM
7710 POWER INDICATING SYSTEM
7711 ENGINE PRESSURE RATIO (EPR)
7712 ENGINE BMEP/TORQUE INDICATING
7713 MANIFOLD PRESSURE (MP) INDICATING
7714 ENGINE RPM INDICATING SYSTEM
7720 ENGINE TEMP. INDICATING SYSTEM
7721 CYLINDER HEAD TEMP (CHT) INDICATING
7722 ENG. EGT/TIT INDICATING SYSTEM
7730 ENGINE IGNITION ANALYZER SYSTEM
7731 ENGINE IGNITION ANALYZER
7732 ENGINE VIBRATION ANALYZER
7740 ENGINE INTEGRATED INSTRUMENT SYSTEM
7797 ENGINE INDICATING SYSTEM WIRING

78 ENGINE EXHAUST

7800 ENGINE EXHAUST SYSTEM
7810 ENGINE COLLECTOR/TAILPIPE/NOZZLE
7820 ENGINE NOISE SUPPRESSOR
7830 THRUST REVERSER
7897 ENGINE EXHAUST SYSTEM WIRING

79 ENGINE OIL

7900 ENGINE OIL SYSTEM (AIRFRAME)
7910 ENGINE OIL STORAGE (AIRFRAME)
7920 ENGINE OIL DISTRIBUTION (AIRFRAME)
7921 ENGINE OIL COOLER

7922 ENGINE OIL TEMP. REGULATOR
7923 ENGINE OIL SHUTOFF VALVE
7930 ENGINE OIL INDICATING SYSTEM
7931 ENGINE OIL PRESSURE
7932 ENGINE OIL QUANTITY
7933 ENGINE OIL TEMPERATURE
7997 ENGINE OIL SYSTEM WIRING

80 STARTING

8000 ENGINE STARTING SYSTEM
8010 ENGINE CRANKING
8011 ENGINE STARTER
8012 ENGINE START VALVES/CONTROLS
8097 ENGINE STARTING SYSTEM WIRING

81 TURBOCHARGING

8100 EXHAUST TURBINE SYSTEM (RECIP)
8110 POWER RECOVERY TURBINE (RECIP)
8120 EXHAUST TURBOCHARGER
8197 TURBOCHARGING SYSTEM WIRING

82 WATER INJECTION

8200 WATER INJECTION SYSTEM
8297 WATER INJECTION SYSTEM WIRING

83 ACCESSORY GEARBOXES

8300 ACCESSORY GEARBOXES
8397 ACCESSORY GEARBOX SYSTEM WIRING

85 RECIPROCATING ENGINE

8500 ENGINE (RECIPROCATING)
8510 RECIPROCATING ENGINE FRONT SECTION
8520 RECIPROCATING ENGINE POWER SECTION
8530 RECIPROCATING ENGINE CYLINDER SECTION
8540 RECIPROCATING ENGINE REAR SECTION
8550 RECIPROCATING ENGINE OIL SYSTEM
8560 RECIPROCATING ENGINE SUPERCHARGER
8570 RECIPROCATING ENGINE LIQUID COOLING
8597 RECIPROCATING ENGINE SYSTEM WIRING

E-3 Forest Service Unique Codes for RTCA

90 OPERATIONAL LOADS MONITORING

9000 OLM SYSTEM
9010 STRAIN SENSORS
9020 COMPUTER/RECORDING SYSTEM
9030 DATA REPORTING SYSTEM
9031 OLM DATA INTEGRITY
9097 OLM SYSTEM WIRING

91 ATU/AFF

9100 ATU/AFF SYSTEM
9110 ATU/AFF ANTENNA
9120 ATU/AFF COMPUTER/DATA
9121 ATU/AFFDATA INTEGRITY
9197 ATU/AFF SYSTEM WIRING

92 RETARDANT DELIVERY SYSTEM

9200 RDS SYSTEM
9210 RDS TANK STRUCTURE
9211 RDS LOADING/OFFLOADING
9220 RDS GATES/DOORS
9221 GATE/DOOR ACTUATORS
9230 RDS HYDRAULIC SYSTEM
9240 RDS EMERGENCY SYSTEM
9250 RDSCONTROLLER/COMPUTER
9297 RDS SYSTEM WIRING

93 SENSOR/CAMERA

9300 SENSOR/CAMERA SYSTEM
9310 SENSOR/CAMERA SYSTEM MOUNTING
9320 SENSOR/CAMERA
9330 SENSOR/CAMERA DATA AQUISITION
9340 SENSOR/CAMERA CONTROL
9397 SENSOR/CAMERA SYSTEM WIRING

94 SMJ AIRCRAFT EQUIPMENT

9400 SMJ AIRCRAFT EQUIPMENT GENERAL
9410 SMJ SEATS
9420 SMJ STATIC LINES
9430 SMJ EXIT PROTECTION
9440 SMJ HANDLES/STRUCTURE
9450 SMJ EXTERNAL CAMERAS

95 HELICOPTER EQUIPMENT

9510 EXTERNAL HOOK
9520 HEC SYSTEM
9521 HEC SECONDARY HOOK
9522 HEC RELEASE SYSTEM
9530 LONGLINE
9531 REMOTE HOOK
9540 CARGO LETDOWN BRACKET (RAPPEL)
9550 EXTERNAL FIXED TANK
9551 EXTERNAL FIXED TANK DOORS
9552 EXTERNAL FIXED TANK CONTROLS
9560 INTERNAL TANK SYSTEM
9561 INTERNAL TANK STRUCTURE
9562 INTERNAL TANK GROUND FILL
9563 INTERNAL TANK GATES/DOORS
9564 INTERNAL TANK HYDRAULIC SYSTEM
9565 INTERNAL TANK ACTUATORS
9566 INTERNAL TANK EMERGENCY SYSTEM
9567 INTERNAL TANK CONTROLLER/COMPUTER
9568 UPLIFT/DRAFT SYSTEM
9570 MISSION EQUIPMENT ELECTRICAL

96 LEAD/ASM

9610 SMOKE GENERATOR SYSTEM

Glossary

Aerial Supervision Module (ASM) – Aircraft with an Air Tactical Pilot (ATP) and an Air Tactical Supervisor (ATS). These aircraft are operated in the dual role of tanker leadplane and Air Attack.

Air Attack – Aircraft used to control airspace over a fire, usually staffed by a pilot and Air Tactical Group Supervisor (ATGS). These are normally contract fixed-wing aircraft piloted by a vendor pilot with an Agency Air Tactical Group Supervisor (ATGS) on board to coordinate airspace use.

Airworthiness (Airworthy) – When an aircraft or one of its component parts meets its type design, or properly altered condition, and is in a condition for safe flight.

Airworthiness Branch – Works in conjunction with the Operations Branch, Pilot Standardization Branch, Business Operations Branch, and Strategic Planner to provide National leadership for airworthiness issues of Agency and contract aircraft. The Airworthiness Branch conducts National oversight and continuing evaluation of the aviation programs.

Aviation Management Directorate (AMD) – Former title of the Office of Aviation Services.

Card – Forest Service approval document for contract aircraft, mechanics, or fuel service vehicles.

End-Product Contract – A means of procuring a service for a site and time specific event, (such as the use of spray, dusting, application of fertilizers, prescribed burning, and so forth), where the contractor is self-sufficient to perform the full extent of the specified service by whatever means the contractor deems most appropriate.

Fixed Operating Rate (FOR) – A Forest Service term for indirect costs associated with aircraft operations.

Flight Services Contract – An aircraft use contract in which the Forest Service maintains operational control (reference FSM 5711.22).

Helicopter External Load Operations – These operations are conducted under the authority of 14 CFR Part 133. The following definitions can also be found in 14 CFR Part 1- Definitions and Abbreviations:

> **Class A rotorcraft-load combination** – in which the external load cannot move freely, cannot be jettisoned, and does not extend below the landing gear.
>
> **Class B rotorcraft-load combination** – in which the external load is jettisonable, and is lifted free of land or water during the rotorcraft operations.
>
> **Class C rotorcraft-load combination** – in which the external load is jettisonable, and remains in contact with land or water during the rotorcraft operations.

Class D rotorcraft-load combination – in which the external load is other than a Class A, B, or C and has been specifically approved by the Administrator for that operation. *This is the load class for rappel operations*.

Leadplane – These are normally Forest Service owned and/or operated aircraft used to lead Airtankers.

Limited Use Helicopter – *This is an interagency designation, not to be confused with the FAA designations for categories of Type/Airworthiness Certificates*. A helicopter certificated in the restricted category or a helicopter certificated in transport or normal category utilizing a reciprocating engine and any other helicopter not operated and maintained in accordance with 14 CFR 135. These helicopters may be used for limited operations such as tank and bucket operations and cargo.

Line Officer – a Forest Service official who serves in a direct line of command from the Chief and who has the delegated authority to make and execute decisions subject to this part.

New Limits – These are the FAA-approved fits and clearances manufacturers adhere to with new component/unit. This may be accomplished using standard or approved undersized and oversized dimensioned parts.

Office of Aviation Services (OAS) – Formerly the Aviation Management Directorate (AMD) and the Office of Aircraft Services. Responsible for Department of Interior (DOI) aviation services.

Ops Manual – A Part 135 and 137 operator's operations manual, which tells the FAA how they will operate.

Ops Specs – FAA Operations Specifications for Part 135 and 137 operators.

Overhaul – Assembled with or to Serviceable Limits.

Payload – The difference between the maximum certificated normal (internal) gross weight and the equipped weight of the aircraft.

Public Aircraft – See 14 CFR 1, Definitions and Abbreviations.

Public Use Aircraft – See FAA Advisory Circular 00-1.1 Government Aircraft Operations.

Rebuilt – Assembled with, or to New Limits.

Reconnaissance – Normally a fixed-wing aircraft used for forest health, surveillance, or for new starts and reconnaissance of ongoing fires. These are usually contract aircraft and pilots with an Agency employee acting as observer.

SAFECOM – Interagency method to report incidents, hazards, maintenance, and airspace intrusions.

Service Bulletin (S/B) – An FAA-approved document issued by manufacturers to address aircraft problems.

Serviceable Limits – Unit not expected to fail prior to next scheduled **TBO**. The service limits are the FAA-approved allowable wear fits and tolerances to which a new limit part may deteriorate and still be a useable component. This may also be accomplished using standard and approved undersized and oversized dimensions.

Special Mission – Fixed-wing aircraft special missions in the Forest Service include airtanker, leadplane/aerial supervision module, air tactical, infrared, smokejumper (including firefighter delivery and paracargo), reconnaissance, patrol, survey, forest health, and other various missions. Rotor-wing aircraft special missions include water/retardant delivery, helitack (including rappel and fire crew transport), internal and external cargo delivery, helicopter coordinator/air attack, and other various missions. See Appendix A for a brief summary of aircraft special missions within the Forest Service.

Standard Use Helicopter – *This is an interagency designation, not to be confused with FAA designations for categories of Type/Airworthiness Certificates*. A turbine powered helicopter which is certificated in the normal or transport category, operated and maintained in accordance with 14 CFR 135 by an operator holding an Air Carrier Certificate. These helicopters may be used for all types of operations such as passengers, reconnaissance, tank or bucket operation, and cargo, for which they are certified. For ICS Type Specifications see the definitions provided by the National Wildfire Coordination Group (NWCG).

STEP – Single-skid, Toe-in, hover Exit/entry Procedures (STEP) describes a set of three distinct maneuvers used by helicopters to insert or extract personnel or carry out other tasks in challenging terrain where a full skid landing might not be feasible or safe.

> **Single-Skid:** One skid (or part of one skid) is in contact with the ground, while the other is not, due to terrain limitations.
>
> **Toe-In:** The forward portion (toes) of the skids make contact with the surface, while the rear part remains elevated.
>
> **Hover:** The helicopter maintains a hover directly above the terrain without making contact.

Type I, II, III, IV Helicopters – Classification of helicopters by passenger and payload capacity. Note: Type IV Helicopters have reciprocating engines and are not used by the Forest Service.

Use Rate – Forest Service term for hourly rate.

Acronyms and Abbreviations (A-F)

A/C – Aircraft.
A&P – Airframe and Powerplant.
AAIP – Approved Aircraft Inspection Program.
AC – Advisory Circular.
ACE – Aviation Conference and Education.
AD – Airworthiness Directive.
ADS-B – Automatic Dependent Surveillance-Broadcast.
AFF – Automated Flight Following.
AFM – Aircraft Flight Manual.
AGL – Above Ground Level.
AIG – Aircraft Inspector Guide.
AKO – Army Knowledge Online.
AM – Amplitude modulation.
AMD – Aviation Management Directorate.
AML – Approved Model List.
ANSI – American National Standards Institute.
ARA – Aircraft Rental Agreement.
ASAM – Aviation Safety Action Message.
ASI – Aviation Safety Inspector.
ASM – Aerial Supervision Module.
ATA – Air Transportation Association.
ATC – Air Traffic Control.
ATCO – Air Taxi Commercial Operators.
ATGS – Air Tactical Group Supervisor.
ATP – Air Tactical Pilot.
ATU – Additional Telemetry Unit.
BAER – Burned Area Emergency Rehabilitation.
BLM – Bureau of Land Management.
BOA – Basic Ordering Agreement.
BPA – Blanket Purchase Agreement.
CAM – Civil Aeronautics Manual.
CAR – Civil Aviation Regulations.
CFR – Code of Federal Regulations.
CMMS – Computerized Maintenance Management System.
CO – Contracting Officer.
COR – Contracting Officer's Representative.
COTR – Contracting Officer's Technical Representative.
CRS – Certified Repair Station.
CTCSS – Continuous Tone Controlled Squelch System.
CWN – Call-When-Needed.
CY – Calendar Year.
DOD – Department of Defense.
DOI – Department of Interior.
DOT – Department of Transportation.
DRS – Dynamic Regulatory System (FAA)
EDRS – Electronic Document Retrieval System.
EFB – Electronic Flight Bag.
ELAM – External Load Attach Mechanism.
ELT – Emergency Locator Transmitter.
EU – Exclusive Use.
EWIS – Electrical Wiring Interconnect System.
FAA – Federal Aviation Administration.
FACT – Foreign Affairs Counter Threat.
FAHD – Fire Applications Help Desk.
FAM – Fire and Aviation Management.
FAO – Forest Aviation Officer.
FCF – Functional Check Flight.
FEPP – Federal Excess Personal Property.
FM – Frequency modulation.
FMO – Fire Management Officer.
FMR – Federal Management Regulation.
FOR – Fixed Operating Rate.
FSCAP – Flight Safety Critical Aircraft Parts.
FSDO – Flight Standards District Office.
FSH – Forest Service Handbook.
FSIMS – Flight Standards Information Management System.
FSM – Forest Service Manual.
FTP – File Transfer Protocol.

Acronyms and Abbreviations (G-P)

GPM – Gallons Per Minute.
GPS – Global Positioning Systems.
GPWS – Ground Proximity Warning System.
GSA – General Services Administration.
GSE – Ground Support Equipment.
HAI –Now VAI.
HAZMAT – Hazardous Materials.
HEC – Human External Cargo
HIGE – Hover In-Ground Effect.
HIT – Health Indicator Test.
HOGE – Hover Out-of-Ground Effect.
IA – Initial Attack; Inspection Authorization.
IAT – Interagency Aviation Training.
IBAC – International Business Aviation Council.
ICA – Instructions for Continued Airworthiness.
ICAP – International Committee for Aviation Policy.
ICS – Incident Command System; Intercom System.
IDS – Instant Deployment System.
IEP – Internal Evaluation Program.
IFR – Instrument Flight Rules.
IHOG – Now NSHO.
ILS – Instrument Landing System.
IMI – Initial Maintenance Inspection.
IR – Infrared.
IS-BAO – International Standard for Business Aviation.
JASC – Joint Aircraft System/Component.
LFS – Large Fire Support.
LFW – Light Fixed-Wing Aircraft.
LOA – Letter of Authorization.
MAFFS – Modular Airborne Firefighting System.
MAP – Mandatory Availability Period.
MC – Management Code.
MEL - Minimum Equipment List.
MMEL – Master Minimum Equipment List.
M/M/S – Make/Model/Series.
MPG – Maintenance Procedures Guide.
MOU – Memorandum of Understanding.
MSDS – Material Safety Data Sheet (now SDS).
Mx – Maintenance.
NASF – National Association of State Foresters.
NDI – Nondestructive Inspection.
NFES – National Fire Equipment System.
NFPA – National Fire Protection Association.
NIFC – National Interagency Fire Center (Boise).
NIICD – National Interagency Incident Communications
Division (i.e., National Radio Cache).
NIMS – National Incident Management System.
NIST – National Institute of Standards and Technology.
NSHO – NWCG Standards for Helicopter Operations
NTDP – National Technology and Development Program.
NTIA – National Telecommunications and Information
Administration.
NTSB – National Transportation Safety Board.
OAS – Office of Aviation Services.
OAT – Outside Air Temperature.
OEM – Original Equipment Manufacturer.
OJT – On-The-Job Training.
Ops Specs – Operations Specifications.
PA - Pressure Altitude; Public Address System.
PASP – Project Aviation Safety Plan.
Pax – Passenger.
PCDS – Personnel Carrying Device Systems.
PDA – Premature Descent After.
PFC – Passenger Facility Charge.
PI – Project Inspector.
PMA – Parts Manufacturer Approval.
PPE – Personal Protective Equipment.
PSD – Plastic Sphere Dispenser.
PTT – Push to Talk.

Acronyms and Abbreviations (Q-Z)

QA – Quality Assurance.
QAS – Quality Assurance Specialist.
QCM – Quality Control Manual.
QEC - Quick Engine Change (Kit).
QTI – Qualified Technical Investigator.
RAO – Regional Aviation Officer.
RASO – Regional Aviation Safety Officer.
RF – Regional Forester.
RII – Required Inspection Items.
RMMS – Rotorcraft Maintenance Manual Supplement.
RO – Regional Office.
RSM – Repair Station Manual.
RTCA – Return to Contract Availability; Radio Technical Commission for Aeronautics.
RVSM – Reduced Vertical Separation Minimum.
SB – Service Bulletin.
SAFECOM – Safety Communiqué.
SAP – Simplified Acquisition Procedures.
SDS- Safety Data Sheet (formerly MSDS)
SEAT – Single-Engine Airtanker.
SHP – Shaft Horsepower.
SIP – Structural Integrity Program.
SMAAG – Special Mission Airworthiness Assurance Guide.
SMS – Safety Management Systems.
SOF – Safety of Flights.
STC – Supplemental Type Certificate.
STEP – Single-skid, Toe-in, hover Exit/entry Procedures
SUP – Suspected Unapproved Parts.
TAWS – Terrain Awareness and Warning System.
TAS – Traffic Advisory System.
TBD – To Be Determined.
TBO – Time Between Overhaul.
TC – Type Certificate.
TCAS – Traffic Collision Avoidance System.
TCAD – Traffic and Collision Alert Device.
TCDS – Type Certificate Data Sheet.
TCTO – Time Compliance Technical Order.
TEAC – Turbine Engine Analysis Check.
THSP – Technical Specialist.
TICC – Technical Information and Communications Committee (ATA).
TIT – Turbine Inlet Temperature.
TOT – Turbine Outlet Temperature.
TSO – Technical Standard Order.
UAS – Unmanned Aircraft System.
UAT – Universal Access Transceiver.
UAV – Unmanned Aerial Vehicle.
USAF – United States Air Force.
USDA – United States Department of Agriculture.
USFS – United States Forest Service.
VAI – Vertical Aviation International
VDC – Volts Direct Current.
VFR – Visual Flight Rules.
VHF – Very High Frequency.
VLAT – Very Large Airtanker.
VOR – VHF Omnidirectional Range.
VSWR – Voltage Standing Wave Ratio.
WAAS – Wide Area Augmentation System.
WAT – Weather, Altitude, and Temperature.
WCF – Working Capital Fund.
WO – Washington Office (East (DC) or West (Boise)).