USDA Forest Service

Aircraft Inspection Guide Handbook

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Chapter 1 - Introduction

I. Objectives. The objectives of this guide are to:

A. Define and standardize national maintenance management, inspection and operating procedures to ensure safe and efficient operations.

B. Through standardization promote the ability of personnel in different regions to provide a common Agency-wide approach to contract aircraft inspection and maintenance procedures.

C. To provide guidance and familiarization training to employees with the policies, procedures and practices associated with the duties.

D. Provide employees with broad guidance for attaining approval on the National Interagency Inspectors list.

II. Authority. The aviation management directives of the USDA Forest Service.

III. Scope. The procedures contained in this guide apply to agency and contractor aircraft maintenance and inspection procedures for both airplane and helicopter operations.

It is understood that each region's procedures may vary due to differences in regional requirements and varying contract requirements. This guide provides broad and general information for managing aircraft maintenance issues.

IV. Organization. The chapters of this guide are organized to assist aircraft and avionics inspectors in understanding the standards and requirements of Forest Service aircraft maintenance management programs. The various chapters provide the user with the forms, checklists and other aids essential to the job.

The guide will first define the organization and the inspector's major responsibilities. Then it will cover some administrative matters and explain management of the Working Capital Fund (WCF) aircraft. Next the guide will get into what will ultimately constitute the major portion of the inspector's work – oversight of national and regional contract fleets. The guide will explain the basic format of government contracts, and define the standard aircraft and avionics requirements for all contract aircraft. Then, due to the reliance on contract aircraft, an explanation of the Federal Aviation Administration's Operations Specifications will be covered. The guide will explain the pertinent pages to look for and the information that can be found on them. Next, Forest Service forms will be covered, and practices to follow regarding contract aircraft inspection. Finally, the guide will provide a checklist of items that should be reviewed when providing oversight of operators. There are also appendices that provide general information on a wide variety of topics pertinent to the Aircraft Inspector.

V. Publication. The United States Department of Agriculture – Forest Service published this guide.

VI. Revisions. Users are encouraged to recommend changes to this document to the National Aviations Operations Officer for Airworthiness and Logistics.

VII. Ordering and Distribution. This guide is available through the National Aviation Office – West, 3833 South Development Avenue, Boise, ID 83705.

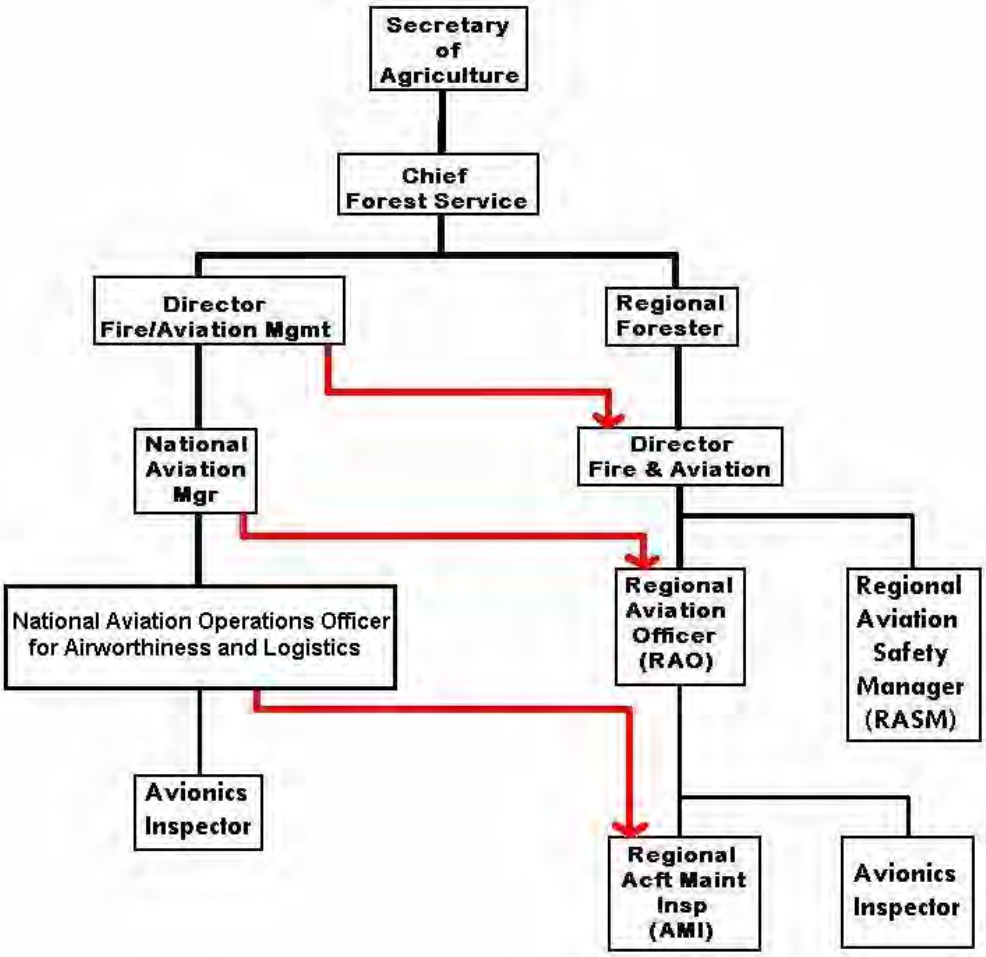
NOTES

Chapter 2 - Organization

I. Introduction. This chapter provides a brief overview of the Forest Service aviation organization. The aviation staffs in the various regions are set up differently depending on the region, but through various lines of authority Aircraft Maintenance and Avionics Inspectors can trace their authority directly back to line officers. Throughout this guide the terms Aircraft Maintenance Inspector and Aircraft Inspector will be used interchangeably.

The Washington Office (West) in Boise is responsible for the national program, and in coordination with the regions, develops aviation policy and procedures. The regional staffs are responsible for the programs in their regions, and have the responsibility to follow and implement National policies and procedures.

The following organizational chart shows the major offices below the Secretary of Agriculture and the inspector's relative position in the organization. As stated above, the regional aviation staffs vary depending upon the region, but the primary offices are shown below. Inspector's responsibilities and those of individuals dealt with on a regular basis are identified in the following paragraphs, verbatim from Forest Service Manual (FSM) 5700 and Forest Service Handbook (FSH) 5709.16.



II. Key Aviation & Aircraft Inspector Positions and Duties. The specific individuals and their duties and responsibilities are listed below. For current guidance on their duties and responsibilities reviw the listed references FSH 5709.16.

A. National Aviation Operations Officer for Airworthiness and Logistics.

Duties and responsibilites can be found in:
FSM 5704
FSH 5709.16, 40.43

B. Regional Aviation Officers (RAO).

Duties and responsibilites can be found in:
FSM 5704
FSM 5720.48c

C. Aircraft Inspectors.

Duties and responsibilites can be found in:
FSH 5709.16, 40.44

D. Avionics Inspectors.

Duties and responsibilites can be found in:
FSH 5709.16, 40.45

E. Regional Aviation Safety Manager (RASM). Regional Aviation Safety Managers (RASM) are responsible for Regional implementation of the Aviation Safety Program. As Aircraft Maintenance Inspectors work closely with the RASM's, their duties and responsibilities are included here.

Duties and responsibilites can be found in:
FSM 5720.48d

The following chapters will provide more details on Inspector duties and responsibilites. It is recommended that one of the first things a new inspector does is read FSM 5700 and FSH 5709.16, from front to back.

Chapter 3 – Responsibilities, Training and Qualifications

I. Introduction. This chapter establishes the common duties and responsibilities of Aircraft and Avionics Inspectors. Most Aircraft Inspectors have the dual role of program manager for their region's aviation maintenance program and aircraft maintenance inspector, both at the national and regional level. For the purpose of this guide the terms manager/inspector will be used interchangeably.

Job Proficiency is important in any job. To assist inspectors in understanding the knowledge requirements of their job, beginning on page 3-10 is a table that can be helpful in determining the many areas an Inspector needs to be familiar with, along with study references. It should be used as a basis for initial study, not as an all inclusive list of Inspector minimum knowledge requirements. 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 find a reference when needed. On the other hand, Inspectors should be thoroughly familiar with the information found in FSM 5700 and FSH 5709.16.

II. Aircraft Maintenance Managers/Inspectors (FSH 5709.16, 40.44). Each region operating Forest Service WCF aircraft will have at least one qualified Aircraft Maintenance Inspector assigned.

Forest Service and contractor aircraft must be maintained in accordance with the Federal Aviation Regulations (FAR). Inspectors must also ensure that Working Capital Fund (WCF) aircraft are maintained in standard configuration as determined by the National Aviation Operations Officer for Airworthiness and Logistics (NAOO-A&L).

Inspectors are required to maintain a current aviation technical library for the Forest Service aircraft being operated in their region, including an FAA regulatory library. Copies of maintenance manuals for some of the more common aircraft operated by contractors in the region should also be acquired.

Managers provide oversight of the inspection programs and airworthiness of Forest Service and contract aircraft. They must also monitor the progress of maintenance being performed by contract maintenance shops on WCF aircraft. 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.

A major responsibility is to perform contract compliance inspections of contract aircraft. Inspectors must remain informed of problems affecting airworthiness of contract aircraft operating in their region, and provide assistance to the field in resolving these problems. They must help managers in the field and give guidance when necessary, in dealing with maintenance related contract issues.

Finally, inspectors must be thoroughly familiar with the contents of, and follow the guidance of FSM 5700 and FSH 5709.16.

III. Aircraft Maintenance Manager/Inspector Qualifications (FSH 5709.16, 42.1). All Aircraft Inspectors must possess a current Federal Aviation Administration Mechanic's Certificate, with both Airframe and Powerplant ratings. (FAR 65. 73) Additionally, inspectors must meet the requirements for an Inspection Authorization (IA). (FAR 65.91)

The 5709.16 states that Inspectors must meet the requirements for an IA. There is a difference between holding an IA and meeting the requirements of one. However, inspectors need to keep in mind that if returning Working Capital Fund (WCF) aircraft to service after an Annual or if supervising Progressive Inspections an IA is required.

It is impossible for inspectors to have intimate knowledge of all the aircraft owned and operated by the Forest Service, and their systems. It is therefore imperative that they have a broad understanding of general aircraft systems. This will allow them to make informed judgments when returning aircraft to service or contract availability.

Inspectors must possess in-depth knowledge of Federal Aviation Regulations. As a minimum they should be knowledgeable of the FAR's in general, and must have an in-depth knowledge of the pertinent sections of the following FAR's:

14 CFR Part 39 – Airworthiness Directives.

14 CFR Part 43 – Maintenance, Preventative Maintenance, Rebuilding, and Alterations.

14 CFR Part 65 – Certification: Airmen Other Than Flight Crew Members.

14 CFR Part 91 – General Operating and Flight Rules.

14 CFR Part 119 – Certification: Air Carriers and Commercial Operators.

14 CFR Part 133 – Rotorcraft External-Load Operations.

14 CFR Part 135 – Operating Requirements: Commuter and On-Demand Operations and Rules.

14 CFR Part 137 – Agricultural Aircraft Operations.

Additionally, inspectors should be familiar with the information contained in the following publications and interagency guides:

A. Interagency Helicopter Operations Guide (IHOG).

B. Interagency Helicopter Rappel Guide.

C. Smokejumper Aircraft Accessory Equipment Guide. (If applicable)

D. Federal Excess Personal Property (FEPP) Program Guide. (If applicable)

III. Avionics Inspectors (FSH 5709.16, 40.45). Some regions have an Avionics Inspector assigned, while in some regions those duties are assigned to the Aircraft Inspector.

A major part of the Avionics Inspector's job is contract compliance. Inspectors are required to inspect contract aircraft and with overseeing WCF avionics contracts. They must be fluent in avionics contract requirement history, avionics contract loopholes, and communications policy to be effective. Contractors will quite often ask for advice on future avionics requirements and contract bids. Ensure any advice given is sound and that it will be accepted by other Avionics Inspectors.

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 have little to do FAA requirements and more to do with what the person on the ground, needs, wants, and expects.

Finally, Inspectors must be thoroughly familiar with the contents of, and follow the guidance of FSM 5700, FSM 6600, FSH 5709.16, and FSH 6609.14.

IV. Avionics Inspector Qualifications (FSH 5709.16, 42.11). Avionics Inspectors shall be knowledgeable of the operations and theory of avionics systems and the installed equipment being inspected and shall have access to the appropriate test equipment to verify the integrity of the avionics systems requiring approval (sec. 40.45).

Looking at the avionics in a Super Cub doesn't take a lot of knowledge, theory, or test equipment. Basic avionics is all that's required which equates to an AV1 rating. However, an airtanker, a Type I or Type II Air Tactical aircraft is another matter. An AV3 rating is required to inspect one of these type aircraft.

An AV1 should be able to inspect avionics in a point-to-point and non-fire aircraft that do not have a VHF-FM aeronautical radio installed. These type aircraft have limited complex fire fighting related avionics equipment. Basic skills and knowledge of avionics are all that are needed to inspect one of these type aircraft, similar to the knowledge most pilots and aircraft inspectors have.

An AV3 would inspect avionics in an aircraft where avionics and communications are essential for mission success. National and Regional Avionics Inspectors are FAA certified Repairmen operating FAA certified Repair Stations. Any local avionics shop can look at an aircraft's avionics, but what about the why, what, where and when? The one-on-one during an inspection will greatly help, not only with the Avionics Inspector's credibility, but the contractor's respect for the Forest Service as

an agency. Remember, avionics is a mystery to most of these people and they rely on Avionics Inspectors for help in giving the agency what we want.

The remaining aircraft are in a gray area whether or not an AV2 Avionics Inspector is required for the inspection. It depends a great deal on how complex is the mission, contract, or aircraft, and who will benefit or be hurt by a good or poor inspection?

All AV1, AV2, and AV3 Avionics Airworthiness Inspectors must be familiar with the following:

14 CFR 43 – Maintenance, Preventative Maintenance, Rebuilding, and Alterations.

14 CFR 91 – General Operating and Flight Rules.

14 CFR 119 – Certification: Air Carriers and Commercial Operators.

14 CFR 135 – Operating Requirements: Commuter and On-Demand Operations and Rules.

14 CFR 137 – Agricultural Aircraft Operations.

All AV2 and AV3 Avionics Airworthiness Inspectors must be familiar with the following:

47 CFR Part 80 to End – Telecommunications.

Manual of Regulations and Procedures for Federal Radio Frequency Management – National Telecommunications & Information Administration (NTIA).

Additionally, Inspectors should be familiar with the information contained in the following publications and interagency guides:

A. Interagency Helicopter Operations Guide (IHOG) (NFES 1885).

B. Interagency Air Tactical Group Supervisors Guide.

C. Military Use Handbook (NFES 2175).

D. MAFFS Operating Plan.

V. Training. Initial training consists of two FAA Academy courses conducted at the FAA Academy (AFS-250) in Oklahoma City, OK, and On-the-Job Training (OJT) provided through the Washington Office. The OJT Training usually consists of a week or two of training with someone on the National Inspectors List. Inspectors are also

required to receive a minimum of 24 hours of aircraft maintenance training annually (FSH 5709.16, 14.2 and 42.2).

While model-specific aircraft training is beneficial, it is recommended that non-aircraft specific type training be the initial focus of training received by new inspectors. An understanding of "systems" is preferable to being an expert on one or two types of aircraft only. An example would be training on a series of engines, i.e. Pratt & Whitney PT6 engines, or general training on airframe systems, versus a Bell 407 or AS350 course.

Training on Federal Aviation Regulations, effective management practices, accident investigation techniques, etc. is highly recommended.

Inspectors are also required to attend the USFS Inspector's Workshop at least once every two years.

VI. FAA Training. Two FAA Academy courses are required to be taken within the first year after hire. In the event the FAA is not offering the course in the required time frame, or under certain circumstances this may be extended until the course is offered. They are:

21054 Airworthiness Indoctrination Technical Core (72 Hours).
21056 General Aviation Airworthiness Indoctrination (40 Hours)
21054 is a pre-requisite for attending 21056.

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

21026 Suspected Unapproved Parts (28 Hours).
21051 Structural Inspection Programs Evaluation (24 Hours).
21811 Aircraft Alterations and Repairs (32 Hours).

The following are some other FAA training courses that are available that may prove beneficial, depending on the inspector's background and interests.

21016 Part 21 (32 Hours).
21056 Air Carrier Airworthiness Indoctrination (40 Hours).
21058 Certification/Surveillance of Part 145 R.S. (28 Hours).
21660 Aircraft Certification Indoctrination (56 Hours).
22006 System Safety (24 Hours).
27902 Introduction to Civil Aircraft Certification (24 Hours).
27903 FAR Part 21 Seminar (24 Hours).

The National Aviation Operations Officer for Airworthiness and Logistics has copies of the following FAA courses available on DVD.

25800 (Video) Introduction to Aircraft Loads/Basic Loads (4 Hours).
25801 (Video) Damage Tolerance (4 Hours).
25803 (Video) Flutter/Aeroelastic Stability (8 Hours).
25804 (Video) Repairs and Modifications (4 Hours).
25805 (Video) Composite Materials (4 Hours).
25806 (Video) Introduction to Metallurgy (5 Hours).
25807 (Video) Crashworthiness (4 Hours).
25809 (Video) Systems Safety Assessment (4 Hours).
25810 (Video) Stress Analysis (3 Hours).

VII. Interagency Aviation Training (IAT). The following are the IAT training modules that are recommended to be completed within the first 12 months of appointment. Many of these may be completed on-line at http://iat.nifc.gov/, or may be taken during the Aviation Conference and Education (ACE) conferences held annually.

A101 Aviation Safety
A105 Aviation Life Support Equipment
A106 Aviation Mishap Reporting
A107 Aviation Policy and Regulations I
A110 Aviation Transport of Hazardous Materials
A113 Crash Survival

A201 Overview of Safety & Accident Prevention Program
A202 Interagency Aviation Organizations

A302 Personal Responsibility & Liability
A303 Human Factors in Aviation
A305 Risk Management
A307 Policy & Regulations II
A310 Crew Resource Management

The modules in blue are recommended to be taken as refreshers every other year.

The Department of Interior requires their inspectors to receive 30 credits of aviation related training every 2 years. The following is a breakdown of the options available to fulfill this requirement. If possible Forest Service Inspectors should attempt to follow these same guidelines.

Manufacturer's school – Airframe	20
Manufacturer's school – Engine	10
Manufacturer's school – Avionics	20
General Radio Telephone Operator License	20
HAI/PAMA Maintenance Training Seminar	10

Aviation Safety Course USC/HAI (other professional courses)	20
Accident Investigation Course USC/TSI (FAA)	20
AMC Inspection Refresher	4
FAA Safety Seminar (4 hours minimum)	4
Maintenance computer-based training courses	4
HAZMAT Training	4
Interagency Fire Courses	4
College Courses (aviation)	4

USFS INSPECTOR EDUCATION AND TRAINING PROGRAM

Suggested Training Requirements For Designation as an USFS Approved Inspector

The following pages give broad guidance for training and knowledge requirements necessary to be approved on the USFS Approved Inspector listing by the Regional Aviation Officer. A new Inspector may be included on the National Interagency Inspector List prior to attending the two FAA Academy Courses if approved by their RAO and the National Aviation Officer for Airworthiness and Logistics.

Required for All Inspectors

1. 21054 Airworthiness Indoctrination Technical Core _____
2. 21056 General Aviation Airworthiness Indoctrination _____
3. On-the-Job Training (OJT) _____
4. USFS Inspector Workshop _____
5. 5700/5709.16 manuals and handbooks _____

Suggested for All Inspectors

1. 21026 Suspected Unapproved Parts _____
2. 21051 Structural Inspection Programs Evaluation _____
3. 21811 Aircraft Alterations and Repairs _____
4. Aviation Management Course_____
5. Aviation Contract Administration _____
6. Aircraft Accident Prevention Course_____
7. The Interagency Helicopter Operations Guide (IHOG) _____
8. CWN helicopter contract _____
9. Regional Helicopter type III contract, CWN helicopter contract _____
10. National Airtanker Contract _____

11. Air Attack/Special Mission fixed wing contract _____

Recurring Educational and Training Requirements

1. Attendance at the USFS Inspector Workshop once every two (2) calendar years.

2. At least 24 hours of aircraft maintenance training annually (FSH 5709.16, 42.2).

Suggested for All Avionics Inspectors

1. FSH 6609.14 & FSM 6600 _____

2. 47 CFR Part 80 to End _____

3. National Telecommunications and Information Administration (NTIA) Manual _____

As a rule, inspectors are normally not placed on the National Inspectors List for a specific type aircraft until they have participated in an inspection trip with another inspector. However, if an individual has previous experience on the type aircraft in question, quite often they will be approved based on their past experience. This determination will be made by the National Aviation Operations Officer for Airworthiness and Logistics following a recommendation by the RAO. There are 11 categories a maintenance inspector may be approved for:

MA – MAINTENANCE AIRPLANE

1. Airtanker Initial Approval
2. Smokejumper Aircraft Initial Approval
3. Specially Equipped Small Aircraft Initial Approval
4. Return to Contract Service Approval

MH – MAINTENANCE HELICOPTER

1. Type I Helicopter Initial Approval
2. Type II Helicopter Initial Approval
3. Type III & IV Helicopter Initial Approval
4. Return to Contract Service Approval

AV – AVIONICS ENDORSEMENTS

1. Conformity checks on point-to-point and non-fire reconnaissance aircraft excluding, those aircraft/rotorcraft with an installed VHF-FM aeronautical radios.

2. Performance testing on any aircraft/rotorcraft used for fire reconnaissance, Air Attack Type III and IV, and any rotorcraft (excluding AV3 items) missions.
3. Performance testing on any aircraft/rotorcraft used for lead plane, airtanker/helitanker, smokejumper, aerial supervisory module, Air Attack Type I and II, and any mission not previously specified.

On the following pages is a list of subject areas that as a minimum the Aircraft Inspector should be knowledgeable of, and can be used as a self-study checklist. The codes listed in the far right column can be used to delineate the importance of the different knowledge areas. These can be used as a guide by Inspectors to determine if they have the appropriate level of knowledge. Where AIG is referred to in the Reference column it means information provided in this handbook, and National Avionics Standards are abbreviated as NAS.

a - ability to readily find the required information.
b - basic knowledge and understanding of the essentials.
c - thorough knowledge and proficiency required.

JOB PROFICIENCY STANDARD

Item	Description	Reference - Study Material	
	NOTE: Abbreviations **AIG –** *This handbook* **NAS –** *National Avionic Standards (see Appendix 7)*		
A	**Forest Service Manual 5700**	**FSM 5700**	
1	Describe FS aircraft approval policy	FSM 5703.1 FSM 5703.2	b
2	Describe FS Public Aircraft Flight Operations policy	FSM 5703.31	b
3	State the FS Civil Aircraft Operating policy with regard to FAR requirements	FSM 5703.32	b
4	Identify the major responsibilities of the National Aviation Operations Officer for Airworthiness and Logistics	FSM 5704.23	b
5	List the major responsibilities of Aviation Maintenance Personnel	FSM 5704.8	c
6	List the references pertinent to the Aviation Maintenance Inspector as identified in the 5700 Manual	FSM 5706	b
7	Describe the FS policy standards for Contract Aviation Services	FSM 5710.34	b
8	Describe the FS policy standards with regard to Cooperators	FSM 5710.35	a
9	Explain what the following terms mean: Administrative Use Aerial Supervision Module(ASM) Air Tactical Group Supervisor (ATGS) End Product Contracts Flight Services Contract Leadplane Operational Control Special Mission	FSM 5710.5	b
10	Explain the FS policy with regard to End-Product Contracts and how it affects AMI's	FSM 5711.21	a
11.	Explain the FS policy with regard to Flight Services Contracts and how it affects AMI's	FSM 5711.22	a
12	List the qualifications for employee Aircraft/Avionics Inspectors	FSM 5712	c
13	Identify who may approve aircraft for FS use.	FSM 5713.4, FSM 5713.45	c
14	Identify how aircraft approvals are documented	FSM 5713.45, FSM 5717.04f	c
15	List the type aircraft that may be approved for night operations	FSM 5716.2	b
16	Identify the PPE requirements for employees participating in low-level flight operations	FSM 5716.31	c
17	Identify who must approve all major modifications to WCF aircraft.	FSM 5718.3	c

B	Forest Service Handbook 5709.16	FSH 5709.16	
1	List the type procurements documents used for obtaining aviation services	11.2	b
2	State the minimum certification and operational requirements for contractors	11.21a	c
3	Describe FS policy regarding operations as Public Aircraft	11.21b	c
4	List the minimum general requirements for contract aircraft	11.24a	b
5	List the minimum equipment requirements for contract aircraft	11.24b	b
6	List the minimum avionics requirements for contract aircraft	11.24c	b
7	Explain aircraft approval requirements for contract aircraft	11.25	c
8	Describe the approval process and practices for contract point-to-point aircraft	14.12	c
9	State the length of time a Special Mission aircraft can be approved for.	14.13 Contracts	c
10	List the minimum certification requirements for becoming an Aircraft Maintenance Inspector	14.2	c
11	Identify the items to be reviewed during a pre-use contract compliance inspection	14.31	c
12	Identify the records used for approving contract aircraft	16	c
13	Identify and complete a Pre-use Inspection Discrepancy Report	16.1, AIG	c
14	Identify and complete an Aircraft Approval Record/Card:	16.2, AIG	c
	5700-21 Airplane Data Record	AIG	
	5700-21a Helicopter Data Record	AIG	
	Point-to-Point Card	AIG	
15	Identify and complete an FS 5700-32 Aircraft Contract Status Report	16.32, AIG	c
16	Explain the process for submitting and maintaining inspection forms	16.34, AIG	c
17	Describe the major responsibilities of Interagency Aircraft Inspectors	17.04	c
18	Explain the elements of a Contract Specification	17.1, Contract Section B, AIG	b
19	List the elements of a contractors FAA Operating Authority	17.11, AIG	b
20	List the elements to be inspected during a review of an aircrafts records	17.12, AIG	c
21	Explain the “Approval for Return to Contract Service” process, and when it is necessary	17.2, AIG	c
22	Identify the minimum configuration and compliance requirements for former Military Aircraft	35.13	b
23	State the minimum performance criteria for single- engine airplanes and why it is important to an AMI	36.21	b
24	State the minimum performance criteria for multi-engine airplanes and why it is important to an AMI	36.21(2)	b
25	State when these requirements may be waived and what actions an AMI must take under these circumstances	36.21(2)	b
26	State the rapid refueling authorizations and restrictions for turbine-powered aircraft	38.7	b

27	Describe the responsibilities of the National Aviation Operations Officer for Airworthiness and Logistics	40.43	b
28	Describe responsibilities of Aircraft Maintenance Inspectors	40.44	c
29	Describe the responsibilities of Avionics Airworthiness Inspectors	40.45	c
30	List the minimum standards FS owned and operated aircraft will be maintained to.	41.1, 43.1, 43.2, 43.3	c
31	State what the Maintenance Personnel Qualifications are for:	42	c
	Aircraft Maintenance Inspectors	42.1	
	Avionics Airworthiness Inspectors	42.11	
32	State the minimum training requirements for Maintenance Personnel	42.2	c
33	Explain the requirements for flight checks and return to service:	44, 44.1	c
	Fixed Wing Aircraft	44.11	
	Rotor Wing Aircraft	44.12	
34	Describe the maintenance records requirements	45.1, 45.2, 45.3	c
35	Explain the Minimum Equipment List requirements and procedures	46, AIG, FAR 91.213	c
C	**Federal Aviation Resources Systems**		
1	Explain the function of the Fed Resources database and its uses	AIG	b
2	Identify the various actions needed to add an aircraft inspection to the database	AIG	b
3	Use the database to verify if an aircraft has been approved for use	AIG	b
4	Complete an Aircraft Inspection record in the database	AIG	c
D	**SAFECOM System**		
1	Describe the function of the SAFECOM system and its uses	AIG	c
2	Describe the SAFECOM process from submittal to final management review	AIG	b
3	Use the database to review a previously submitted SAFECOM	AIG	c
4	Make a corrective action input into the SAFECOM system	AIG	c
5	Complete a SAFECOM	AIG	b
E	**Automated Flight Following System**		
1	Describe the function of the Automated Flight Following System	AIG	a
2	Use the AFF System to identify type and locations of specific aircraft	AIG	a
F	**Procurement Documents**		
1	Explain the various types of procurements documents (Exclusive-Use, Call-When-Needed, BPA, ARA, etc.) and their essential differences	AIG	b
2	Identify the different sections that can be found in a Contract	Contract, AIG	b

3	State the information that is generally found in Section B of a contract	Contract, AIG	b
4	State the information that is generally found in Section C of a contract	Contract, AIG	b
5	State the information that is generally found in Section H of a contract	Contract, AIG	b
6	State the information that is generally found in Section J of a contract	Contract, AIG	b
7	State the information that is found in Section D, E, F, G and I of a contract	Contract, AIG	b
8	State the information that can be found in the Exhibits section of a Contract	Contract, AIG	b
9	List the major responsibilities of a Contracting Officer Representative (COR)	Contract, AIG	b
10	List the major responsibilities of a Contracting Officer Technical Representative (COTR)	Contract, AIG	b
11	List the major responsibilities of Quality Assurance Specialists	Contract, AIG	b
G	**Federal Aviation Regulations**		
	14 CFR Part 1, Definitions and Abbreviations		
	Explain the following terms:		
1	Air Carrier		a
2	Civil Aircraft	*See Public Arcraft*	b
3	Commercial Operator		a
4	Large Aircraft		a
5	Major Alteration		c
6	Major Repair		c
7	Preventative Maintenance		a
8	Public Aircraft	AC 00-1.1, AC 20.132	b
9	Rotorcraft Load Combinations:		a
	Class B		
	Class D		
	14 CFR Part 21, Certification Procedures for Products and Parts	**FAA Order 8130.2**	
1	Identify the Malfunction and Defect reporting requirements for holders of TC's, STC's , PMA's and TSO authorizations.	21.3, AC 21-9A	a
2	Explain under what conditions an Airplane or Rotorcraft Flight Manual is required.	21.5, AC 25-1581-1	b
3	Identify the various Type Certificates that may be issued to an aircraft.	21.21, 21.25, 21.27	b
4	Identify what a type design consists of.	21.31	b
5	Identify what a Type Certificate includes.	21.41	b
6	Identify the privileges of a Supplemental Type Certificate holder.	21.119, AC 21-40	b

7	Explain who may apply for an Airworthiness Certificate.	21.173	a
8	State the two classifications of Airworthiness Certificates.	21.175	b
9	Identify the rules for issuance of Standard Category Airworthiness Certificates.	21.183	a
10	Identify the rules for issuance of Restricted Category Airworthiness Certificates.	21.185, AC 21.25-1	a
11	Identify the rules for issuance of a Special Flight Permit	21.197, 21.199	b
12	Explain what Technical Standard Order (TSO) Authorizations are.	21.601, AC 20-110L	b
13	Identify the marking requirements for TSO'd items.	21.603, AC 20-110L	a
14	Identify the main points of U.S. Military Surplus Flight Safety Critical Aircraft Parts (FSCAP) program	AC 20-142	a
	14 CFR Part 23, Airworthiness Standards: Normal, Utility, Acrobatic, and Commuter Category Aircraft		
1	Identify the requirements for an aircraft to qualify as a Normal Category aircraft.	23.3	b
2	Identify the requirements for determining empty weight and center of gravity.	23.29, AC 120-27E	a
3	Explain the general requirements for Landing Gear Extension and Retraction Systems.	23.729	a
4	Explain the general requirements for Tires.	23.733, AC 20-97A	a
5	Identify the Cockpit Control Knob Shape requirements.	23.781	b
6	Identify the requirements for seat, safety belts and shoulder harnesses.	23.785, AC 12-110L, AC 21-34, AC 91-65	b
7	Identify the placard and restraint requirements for baggage and cargo compartments.	23.787	b
8	Identify the Emergency Exit marking requirements	23.811	b
9	Identify the hand held fire extinguisher requirements for aircraft.	23.851	b
10	Identify the material requirements for aircraft interiors.	23.853, AC 25.853-1	b
11	Identify the bonding requirements for aircraft components.	23.867	a
12	Identify the powerplant limitations that must be included in the Airplane Flight Manual.	23.903(d), (e)	a
13	Identify the fuel filler opening requirements for airplanes.	23.973, AC 20-116	b
14	Identify the fireproofing requirements for engine firewalls.	23.1191	a
15	Identify the isolation requirements for air cooled radial engines.	23.1192	a
16	Identify the requirements for engine fire detector systems	23.1203	b
17	Identify the installation requirements for equipment.	23.1301, AC 23.1309-1, AC 25.1353-1	a
18	Identify the flight and navigation instrument requirements.	23.1303	a

19	Identify the powerplant instrument requirements.	23.1305	a
20	Identify the location requirements for Flight, Navigation and Powerplant instruments.	23.1321	a
21	Identify the warning, caution and advisory light requirements.	23.1322	b
22	Identify the Airspeed Indicating System requirements.	23.1323	a
23	Identify the Static Pressure System requirements.	23.1325	a
24	Identify the Magnetic Direction Indicator System requirements.	23.1327	a
25	Identify the power supply requirements for instruments.	23.1331	a
26	Identify the Powerplant instruments requirements	23.1337	a
27	Identify the Electrical System capacity requirements.	23.1351	a
28	Identify the battery design and installation requirements.	23.1353, AC 25.1353-1	a
29	Identify the requirements for circuit protective devices.	23.1357, AC 25.1357-1	a
30	Identify placarding requirements for switches.	23.1367	b
31	Identify the stowage requirements for safety equipment.	23.1411	b
32	Identify the general provisions for electronic equipment.	23.1431	a
33	Identify the minimum installation requirements for Cockpit Voice Recorders.	23.1457, AC 25.1457-1	a
34	Identify the minimum installation requirements for Flight Data Recorders.	23.1459, AC 20-141, AC 21-10A	a
35	Identify the general marking and placarding requirements.	23.1541	b
36	Identify the general requirements for instrument markings.	23.1543	b
37	Identify the marking requirements for Airspeed Indicators.	23.1545	b
38	Identify the marking requirements for Magnetic Direction Indicators.	23.1547	b
39	Identify the marking requirements for Powerplant Indicators.	23.1549	b
40	Identify the marking requirements for Fuel Quantity Indicators.	23.1553	b
41	Identify the marking requirements for Fuel System Cockpit Control marking requirements.	23.1555	b
42	Identify the placards and markings required for baggage and cargo compartments.	23.1557	b
43	Identify the operating limitations placard requirements.	23.1559	b
44	Identify the placards and markings required for safety equipment.	23.1561	b
45	Identify the placards required for Airspeed Indicators.	23.1563	b
46	Identify the general provisions for Airplane Flight Manuals.	23.1581	b
47	Identify the operating requirements required to be in an Airplane Flight Manual.	23.1583	a
48	Identify the test procedures to be followed when performing burn tests of materials used in aircraft interiors.	Appendix F	a
49	Identify the requirements for Instructions for Continued Airworthiness (ICA).	Appendix G, AC 33.4-1	a

	NOTE: *ICA requirements for Part 25 aircraft can be found in its Appendix H, and part 27 and 29 rotorcraft are found in their Appendix A.*		
	NOTE: *Many certification requirements specified in Part 25, 27 and 29 are located under the same paragraph suffix as in Part 23. (i.e. 23.29, 25.29, 27.29 and 29.29 all reference empty weight and c.g. requirements.) For rotorcraft unique requirements, Part 27 and 29 follow the same numbering format. Therefore, the Part 23 listing can be referred to for finding most items required by a Part 25, 27 or 29 certified aircraft. Below are listed only those items with a different reference, or additional certification requirements not found in Part 23.*		
	14 CFR Part 25, Airworthiness Standards: Transport Category Aircraft.		
1	Identify the requirements for retention of equipment stowed in the crew and passenger compartments	25.789	a
2	Identify the requirements for reinforcement near propellers.	25.875	a
	14 CFR Part 27, Airworthiness Standards: Normal Category Rotorcraft.		
1	Identify the requirements for an aircraft to qualify as a Normal Category rotorcraft.	27.1	b
2	Identify what is classified as a *"critical part."*	27.602	b
3	Identify the requirement to display the maximum rotorcraft external load.	27.865(e), *Also see 133.49(b)*	c
4	Identify the requirements for engine fire detector systems	27.1195	b
5	Identify tail rotor visibility requirements	27.1565	c
	14 CFR Part 29, Airworthiness Standards: Transport Category Rotorcraft.		
1	Identify the hand held fire extinguisher requirements for aircraft.	29.853	b
2	Identify the requirements for engine fire detector systems	29.1203	b
	14 CFR Part 39, Airworthiness Directives		
1	State in general terms the requirements of FAR 39	39, AC 39-7	c
2	State why an Airworthiness Directive is mandatory	39.13	c
	14 CFR Part 43, Maintenance, Preventative Maintenance, Rebuilding, and Alterations	AC 43.13-1B, AC 43.13-2A, AC 43-12A	
1	Identify who is authorized to perform maintenance and complete a return to service	43.3, 43.7	c
2	State the minimum requirements for an aircraft log entry following maintenance	43.9, AC 43-9C	c

3	State the minimum requirements for an aircraft log entry following an inspection	43.11, AC 43-9C	c
4	Explain the general performance rules for maintenance	43.13	c
5	Explain the additional performance rules for inspections	43.15	c
6	Explain the rules with regard to Airworthiness Limitations	43.16	c
7	Identify what constitutes a Major Alteration or Repair.	Appendix A, AC 120-77	c
8	Identify the recording requirements for Major Repairs or Alterations	Appendix B, AC 43.9-1E	c
	14 CFR Part 45, Identification and Registration Marking		
1	Identify the general requirements for dataplates for aircraft and engines	45.11(a), 45.13, AC 43-17, AC 45-2C, AC 45-3	b
2	State the requirements for displaying “restricted” on restricted category aircraft.	45.23(b)	c
3	Identify the requirements for location on N numbers on fixed wing aircraft.	45.25, AC 45-2C	b
4	Identify the requirements for location on N numbers on rotor wing aircraft.	45.27, AC 45-2C	b
5	Identify size requirements for N numbers.	45.29, AC 45-2C	b
	14 CFR Part 47, Aircraft Registration		
1	State the general Aircraft Registration requirements	47	b
2	Identify the length of time a temporary registration is valid for.	47.31(b)	b
	14 CFR Part 65, Certification: Airmen Other Than Crewmembers		
1	Be knowledgeable of the General Privileges, Limitations, and recent experience requirements of an A&P Mechanic	65.81, 65.83	c
2	Explain the Privileges and Limitations of an Inspection Authorization	65.95	c
	14 CFR Parts 91, 133, 135 & 137, Operating Rules		
1	Describe airworthiness, flight manual, markings and placard requirements for a civil aircraft	91.7, 91.9, AC 25.1581-1	c
2	State the certification requirements for a civil aircraft	91.203	b
3	State the ELT requirements for a civil aircraft	91.207, AC 91-44A	c
4	Describe the requirements and procedures for deferring inoperative equipment	91.213, 91.405, 135.179, AC 91-67, Ops Specs, MEL, AIG	c

5	Identify the minimum requirements for TCAS and TAWS in civil aircraft	91.221, 91.223, 135.180, 135.154, AC 23-18	b
6	Identify the requirements for GPWS in civil aircraft	135.153	b
7	Identify the requirements for oxygen equipment for civil aircraft under Part 135	135.157	b
8	State the general operating limits of Restricted Category aircraft	91.313	b
9	State the requirements for Pitot-Static and Transponder Checks	91.411, 91.413, 43 App. E & F, AC 43-203	c
10	Explain the requirements for aircraft inspection of civil aircraft:	91.405	c
	Annual	91.409a	
	100 Hour	91.409b	
	AAIP	91.409c & f, AC 135-10A	
	Progressive	91.409d,	
	Manufacturer's Program	91.409e & f	
	changes to inspection programs	91.409g & h	
11	Explain the requirements for when a flight check is required following maintenance	91.407	b
12	State the general requirements for aircraft records	91.417, AC 43-9C	c
13	Identify where the qualification requirements for Part 135 management personnel can be located	119.71	a
14	Identify the manual requirements for a Part 135 Operator	135.21, 135.23	a
15	Identify the requirements for carrying passengers under Night VFR and IFR	135.159, 135.161, 135.163, 135.165	a
16	Identify the Weight and Balance requirements for Part 135 aircraft	135.23(b) 135.185, AC 120-27E	b
17	Identify the requirements for submitting Mechanical Reliability Reports, Service Difficulty Reports and Mechanical Interruption Reports for Part 135 aircraft	135.415, 135.416, 135.417 AC 20-109A	a
18	Identify the policy pertaining to AAIP's	135.419	b
19	Identify the Additional Maintenance requirements for Part 135 aircraft	135.421, AC 135-7	b
20	Identify the Aging Airplane Inspection requirements for multi-engine airplanes with 10 or more passenger seats.	135.422	a
21	Identify the Aging Airplane Inspection requirements for multi-engine airplanes with 9 or less passenger seats.	135.423	a
22	Identify the rules for Rotorcraft External Loads	133, AC 133-1A	b

23	State the requirement to display the maximum rotorcraft external load.	133.49(b), *Also see 27.865(e)*	c
24	Identify the rules for Agricultural Aircraft certified under the FAR's.	137, AC 137-1	b
25	Identify the requirements for carrying airworthiness certificates and registrations in agricultural aircraft.	137.33(b)	b
26	Identify the rules for Agricultural Aircraft certified under CAR 8	CAR8, CAM 8	b
H	**FAA Operating Authority & Certificates**		
1	State the three types of FAA Operating Certificates, their authorizations and limitations:	FAR, AC 120-49, AIG	b
	14 CFR Part 133, Rotorcraft External Load Operations	FAR 133, AIG	
	14 CFR Part 135, Commuter and On-Demand Operations	FAR 135, AIG	
	14 CFR Part 137, Agricultural Aircraft Operations	FAR 137, AC 137-1, AIG	
2	Identify the Parts of the Ops Specs that must be reviewed when inspecting an aircraft during a contract compliance inspection, and the information that must be verified:	119.49, Ops Specs, AIG	
2a	Part A – General	AC 135-7	
	A15- Autopilot in Lieu of Required Second in Command	Ops Specs, AIG	b
2b	Part D – Aircraft Maintenance	8300.10, Vol 2, Chp 84	
	D73 – Approved Aircraft Inspection Program	Ops Specs, AIG	b
	D85 – Aircraft Listing	Ops Specs, AIG	
	D95 – MEL	Ops Specs, AIG	
	D101 – Additional Maintenance Requirements - Airplane	Ops Specs, AIG	
	D102 – Additional Maintenance Requirements – Rotor	Ops Specs, AIG	
	D104 – Additional Maintenance Requirements – Emergency Equipment	Ops Specs, AIG	
I	**Forest Service Forms**		
	Identify the following forms and state what their use is, and how to properly complete them:		
1	FS-5700E, Aircraft Maintenance Log	AIG	c

2	FS-5700-4, Aircraft Approval Card (Airtankers) - (OAS-36C)	AIG	c
3	FS-5700-21, Airplane Data Record (OAS-36B)	AIG	c
4	FS-5700-21a, Helicopter Data Record (OAS-36C)	AIG	c
5	FS-5700-32, Aircraft Contract Status Report	AIG	c
6	FS-5700-33, Aircraft Pre-Use Inspection Discrepancy Report	AIG	c
7	Point-to-Point Aircraft Data Card (OAS-47)	AIG	c
8	Service Truck – Interagency Data Card	AIG	c
9	Mechanic Qualification Card	AIG	c
10	FS-5700-17, Interagency Helicopter Load Calculation (OAS-67)	AIG	c
J	**Perform a Contract Compliance Inspection of an Aircraft**		
1	Complete an inspection of a vendors aircraft, using a contract and the appropriate approval record.	Contract, AIG	c
2	Review a vendors contract, identifying special requirements.	Contract, AIG	c
3	Review a vendors Operating Authority	Contract, AIG	c
4	Review a vendors Ops Specs	Contract, AIG	c
5	Inspect a vendors aircraft	Contract, FARs, AIG	c
6	Review a vendors aircraft records	Contract, FARs, AIG	c
7	Complete the inspection documentation:		
	For an aircraft that has discrepancies	Contract, AIG	c
	For an aircraft without discrepancies	Contract, AIG	
8	Enter data in the Fed Resources database for the completed inspection	AIG	c
9	Review a vendors mechanic qualification against a contract	Contract, AIG	c
10	Perform an inspection of a Fuel Service Vehicle	Contract, AIG	c
11	Complete the documentation for a Fuel Service Vehicle	AIG	c
12	Complete a Load Calculation to verify compliance with the specification in a contract	Contract, AIG	b
K	**Perform a Contract Compliance Inspection of Special Equipment**		
1	Inspect and review documentation for a Rappel Anchor	Contract, AIG	c
2	Inspect and review documentation for a Bambi Bucket	Contract, AIG	c
3	Inspect and review documentation for a Long Line	Contract, AIG	c
4	Inspect and review documentation for a Remote Hook	Contract, AIG	c
5	Inspect an aircraft 3-pin plug for correct polarity and operation	Contract, AIG	c
6	Inspect an aircraft 9-pin plug for correct polarity and operation	Contract, AIG	c

7	Determine if an aircraft meets the requirements for Air Attack:		
	Type I	Contract, AIG, NAS	c
	Type II	Contract, AIG, NAS	
	Type III	Contract, AIG, NAS	
	Type IV	Contract, AIG, NAS	
L	**Avionics Equipment and Inspection**		
1	Identify ELT requirements for contract aircraft	Contract, AIG	c
2	Explain what schematic and wiring diagrams are required and why	Contract, AIG	c
3	Explain the minimum requirements for VHF-AM radios	Contract, AIG, FAR 91.205	b
4	Identify the requirements for Supplemental Radio (Air Attack) Kits	Contract, AIG	c
5	Explain what AUX-FM Provisions are	Contract, AIG	c
6	Explain the difference between an AV1, AV2, and AV3 rating.	Contract, AIG FSH 5709.16 – 42.11	b
M	FAA Order 8300.100, Airworthiness Inspector's Handbook	8300.10	
1	Identify the requirements for an MEL	Vol. 2, Chap 7	a
2	Inspect a Part 91 aircraft	Vol. 2, Chap 36	a
3	Identify requirements for Ops Specs	Vol. 2, Chap 84	a
4	Evaluate a Part 135 aircraft records	Vol. 2, Chap 92	a
5	Identify the requirements of a Part 135 Manual	Vol. 2, Chap 93	a
6	Evaluate a Part 135 Operators Inspection/Maintenance Requirements	Vol. 2, Chap 91	a
7	Conduct a Ramp Inspection of an aircraft	Vol. 3, Chap 3	a
8	Monitor a Part 91 Operators Inspection Program	Vol. 3, Chap 26	a
9	Inspect a Part 91 aircraft Maintenance Records	Vol. 3, Chap 27	a
10	Inspect a Part 135 Air Carrier	Vol. 3, Chap 39	a
11	Inspect a Part 135 Operators Maintenance Records	Vol. 3, Chap 41	a
12	Inspect a Part 145 Repair Station.	Vol. 3, Chap 97	a
13	Inspect an Operators Maintenance Facility.	Vol. 3, Chap 131	a
N	**National Fire Protection Association (NFPA) Manuals**		
1	Explain the inspection and maintenance procedures for Portable Fire Extinguishers.	NFPA 10, Chapter 4	b
2	State the inspection frequency and inspection procedures for Portable Fire Extinguishers.	NFPA 10, Chapter 4-3	c

3	State the maintenance frequency for Portable Fire Extinguishers.	NFPA 10, Chapter 4-4	c
4	Identify the hydrostatic test intervals for Portable Fire Extinguishers.	NFPA 10, Table 5-2	b
5	Identify the minimum requirements for Fuel Storage Tanks.	NFPA 30, Chapter 2	a
6	State the minimum standards for aircraft fuel servicing equipment.	NFPA 407, Chapter 4	c
7	State the operating procedures to be followed during aircraft fuel servicing.	NFPA 407, Chapter 5	c
8	State the requirements for Rapid Refueling of aircraft.	NFPA 407, Chapter 5-21	c
9	Identify the general requirements for Heliports.	NFPA 418, Chapter 2	b
10	Identify the minimum fire extinguisher requirements for Heliports.	NFPA 418, Chapter 7	b

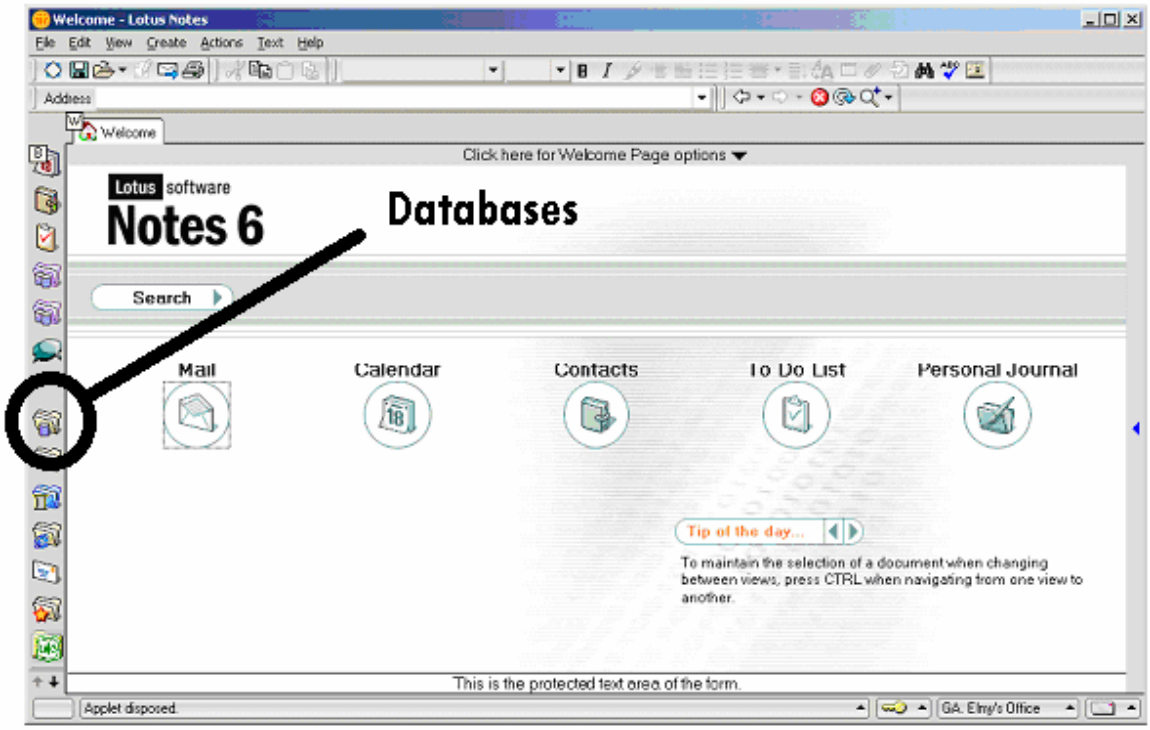
NOTES

Chapter 4 – Administrative Matters, the Internet and Other References

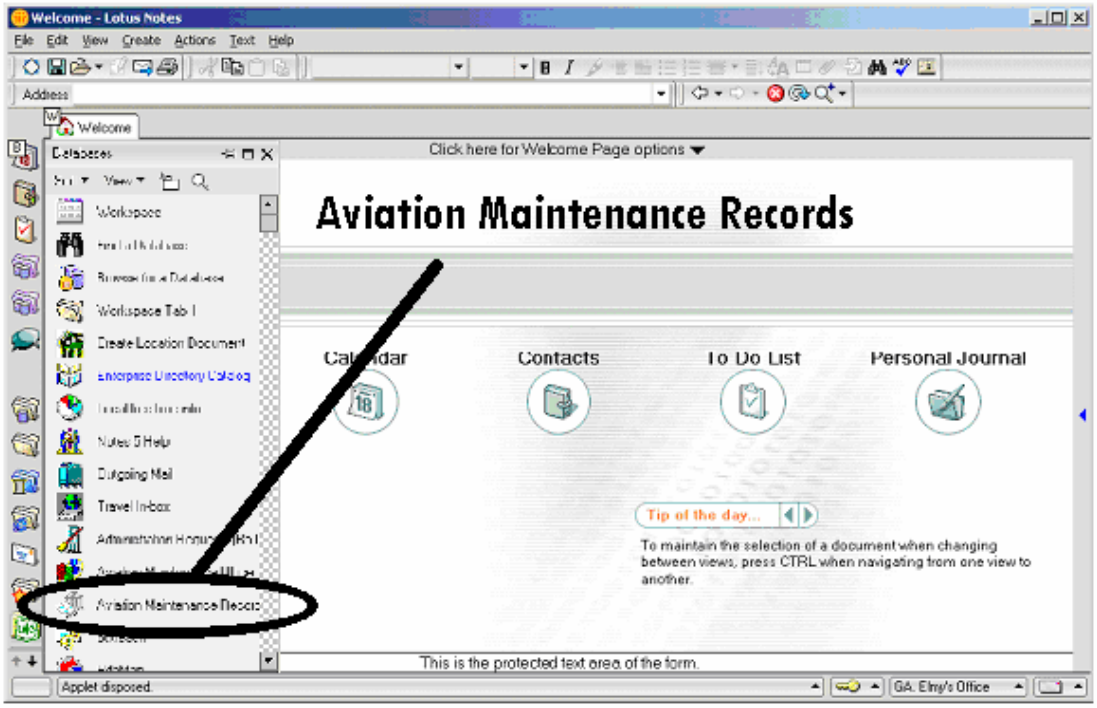
I. Introduction. Periodically Inspectors are required to update the National Aviation Database for WCF aircraft operated in their region. When a contract aircraft is approved (carded), the aircraft information must be entered into the Federal Aviation Resource System (Fed Resource). This chapter will review these procedures. The USFS Safecom system will be covered, and finally a review of some of the numerous internet sites available to make the job easier.

II. National Aircraft Database. This database is accessed from ***Lotus Notes.*** It contains all of the Working Capital Fund (WCF) aircraft status, and on a periodic basis should be updated. It is preferred this be done on at least a quarterly basis. The following pages provide the step by step process. If item 2 below is not shown once databases is selected, Appendix 5 provides the procedure to add it.

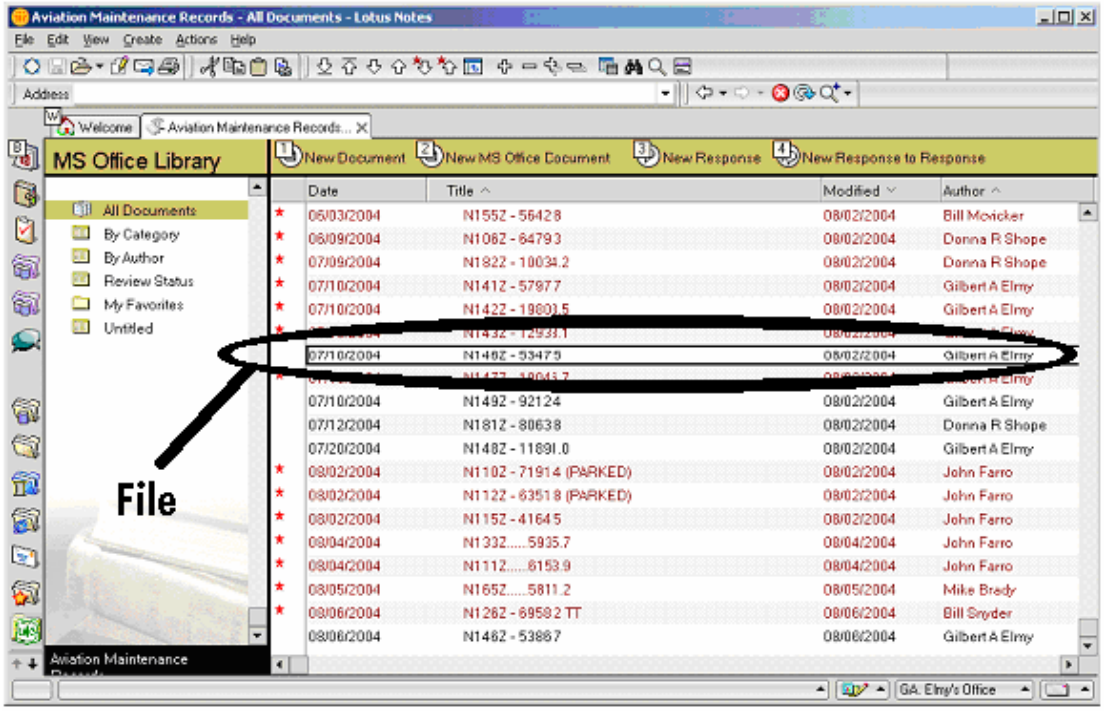
1. From the Lotus Notes Welcome page click on the ***Database*** icon.



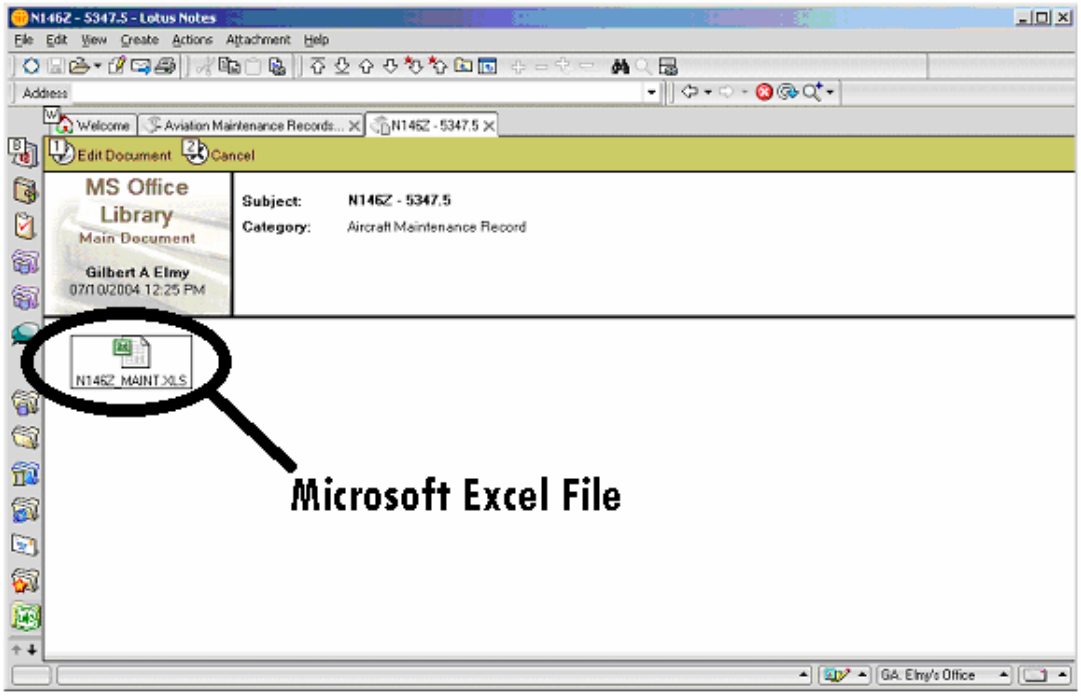
2. Select ***Aviation Maintenance Records.***



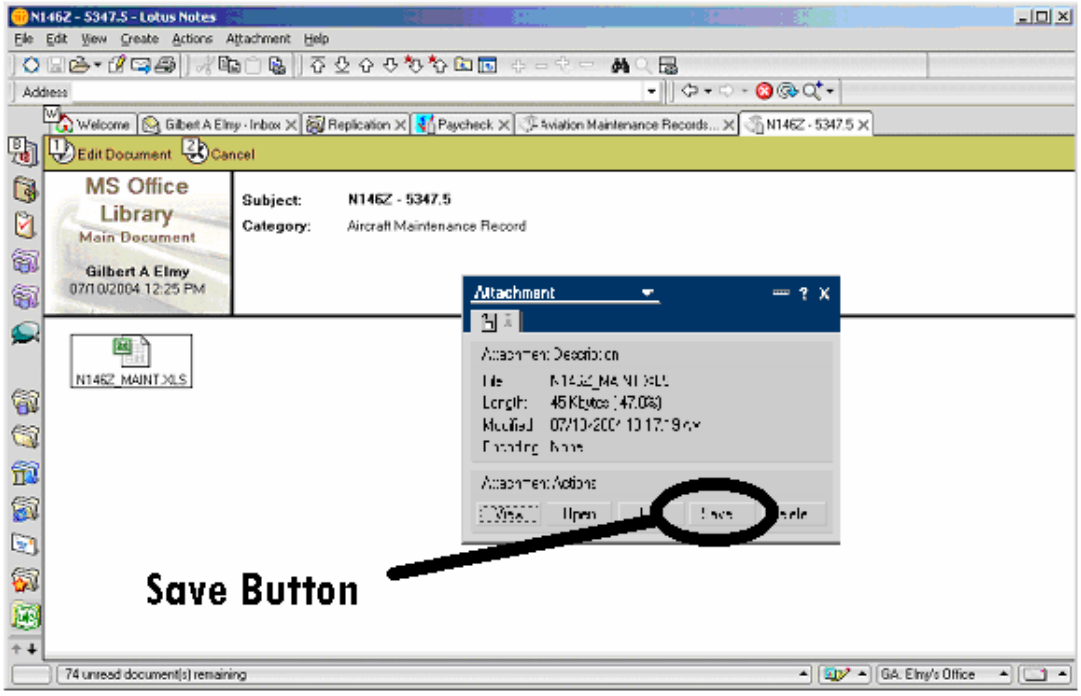
3. Select the record to be detached and edited by double clicking on the file.



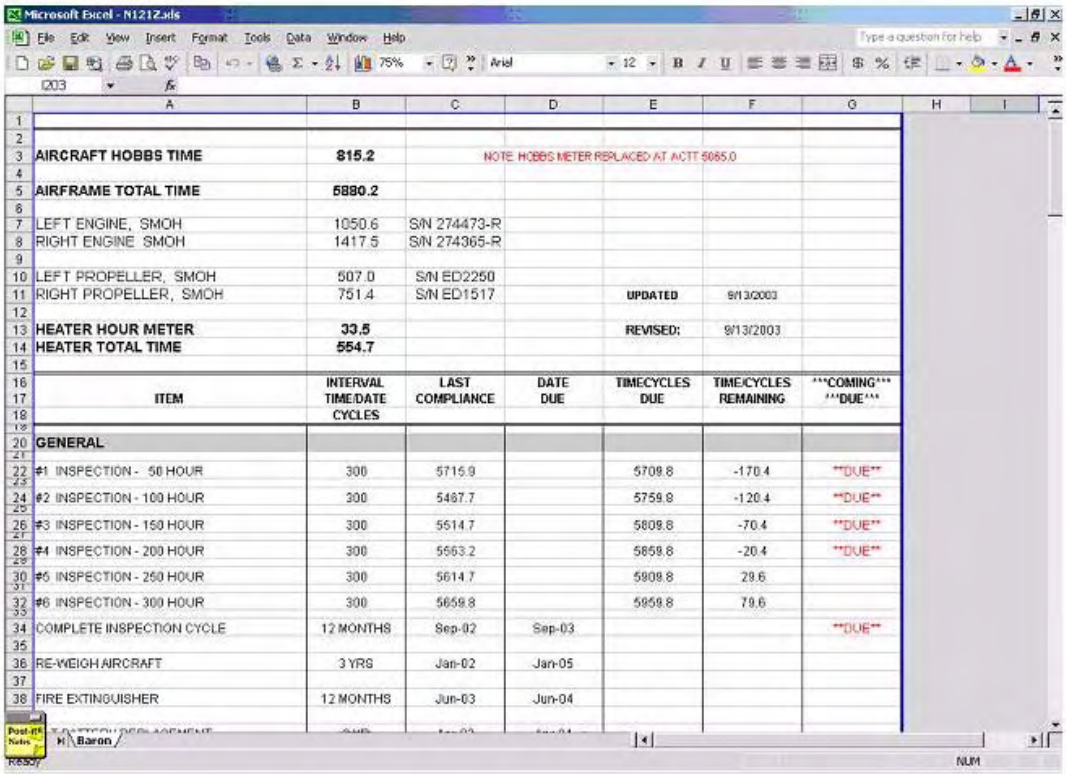
4. Double click on the ***Excel*** file.



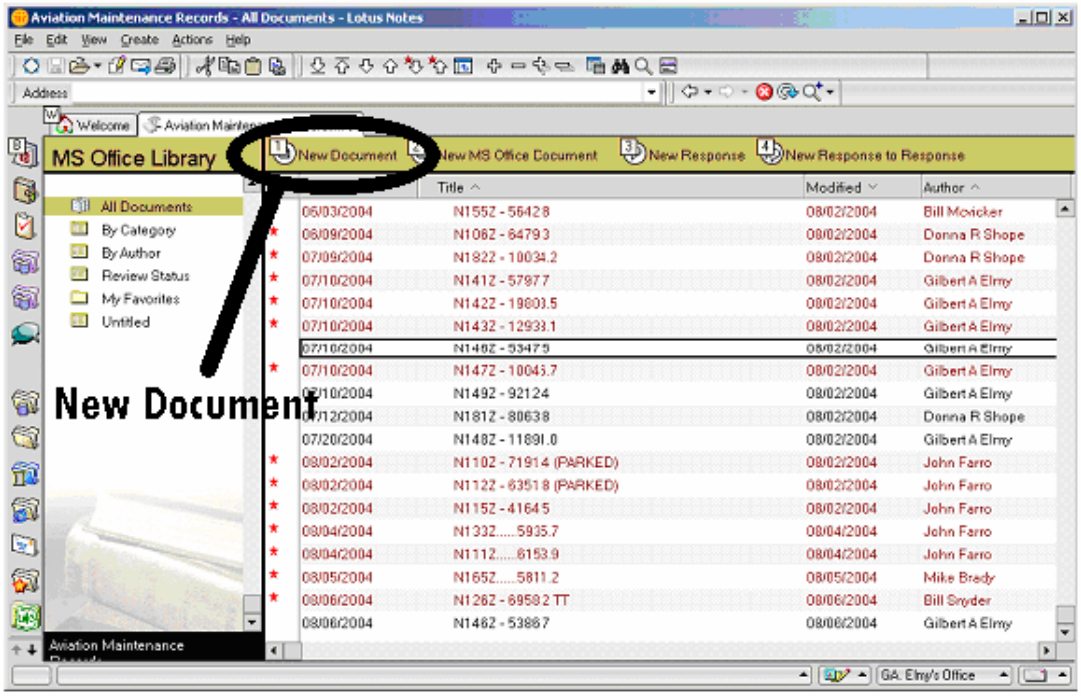
5. Select ***Save***.



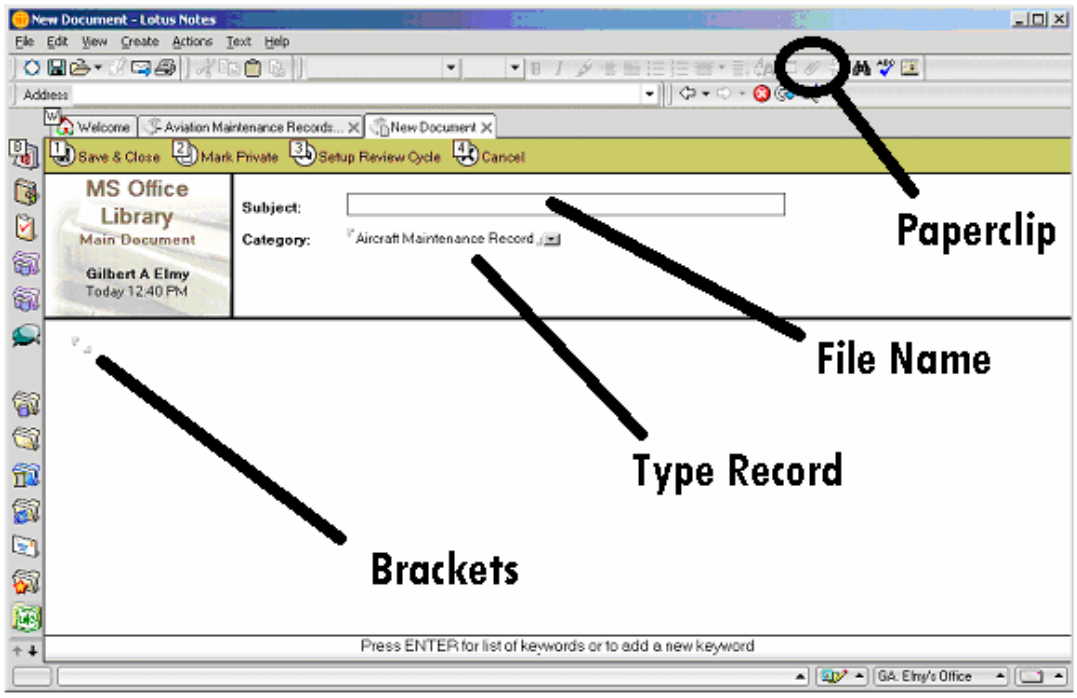
6. Select where the file is to be saved, and once that is done it can be opened and edited it as necessary.



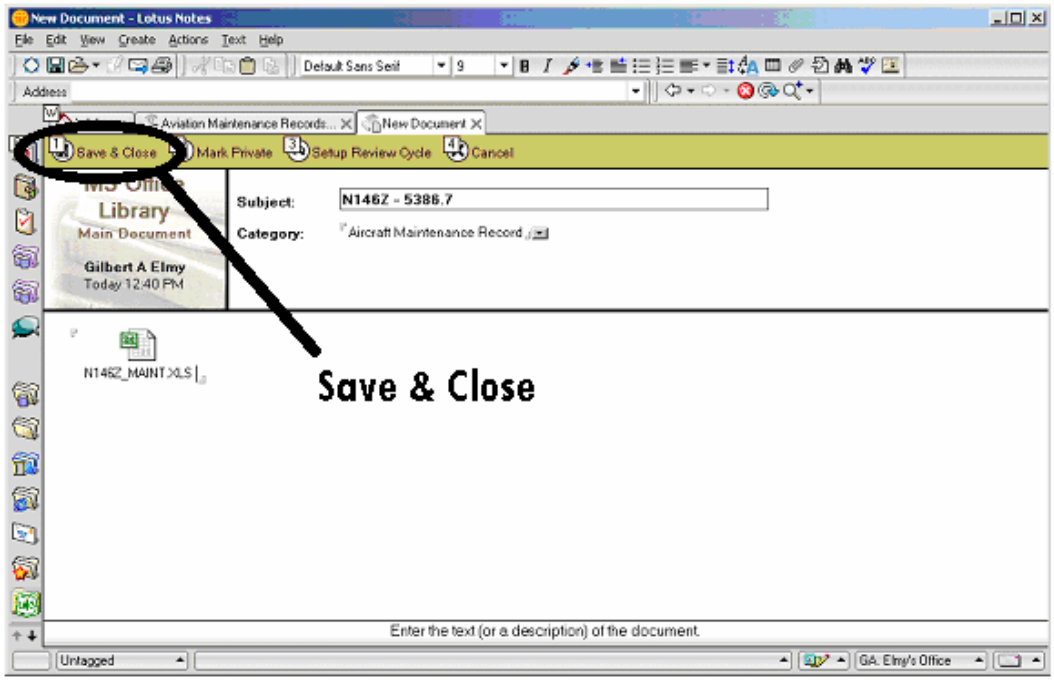
7. To save the new file onto the National Database, select ***New Document***.



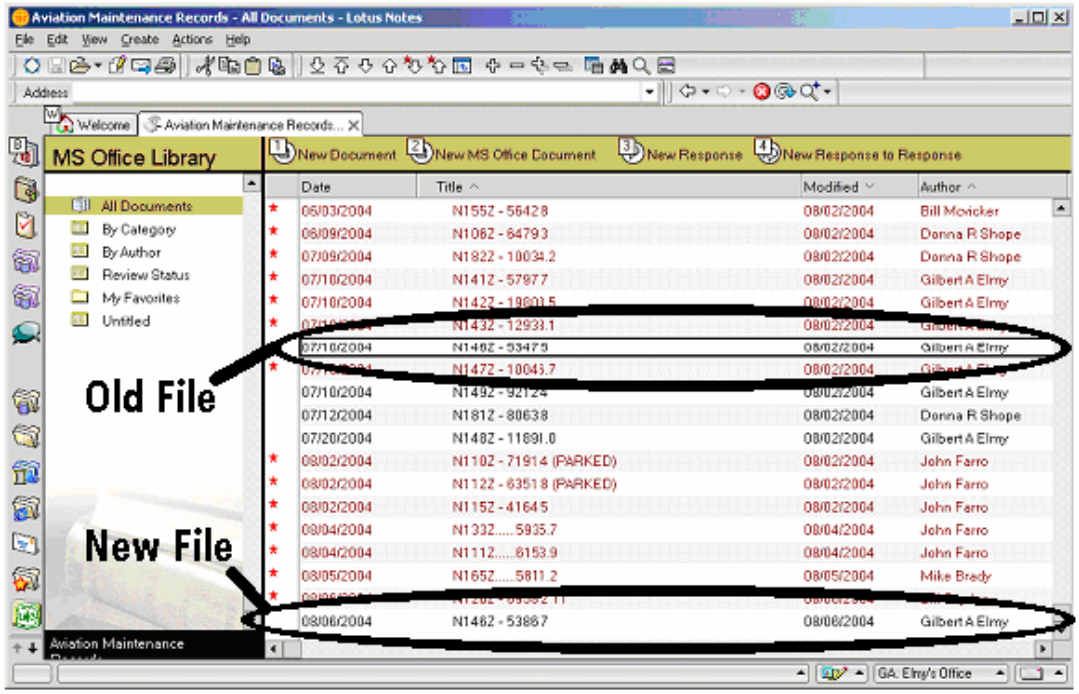
8. Enter the ***File Name, Type Record.*** The ***File Name*** should consist of the "N" Number and the aircraft Total Time. Place the cursor inside the ***"brackets"*** below the Subject/Category line. Then click on the ***paperclip,*** and select the aircraft file to be saved.



9. Select ***Save & Close*** to save the file to the Database.



10. The last thing to do is ***Right click*** on the old file and select ***Cut*** to delete the old file.



Note: Most inspectors detach and keep copies of their aircraft records on their own computers. If this is the case, steps 3, 4, 5, 6 can be skipped after the initial download and the latest version of the file can be attached by starting at step 7.

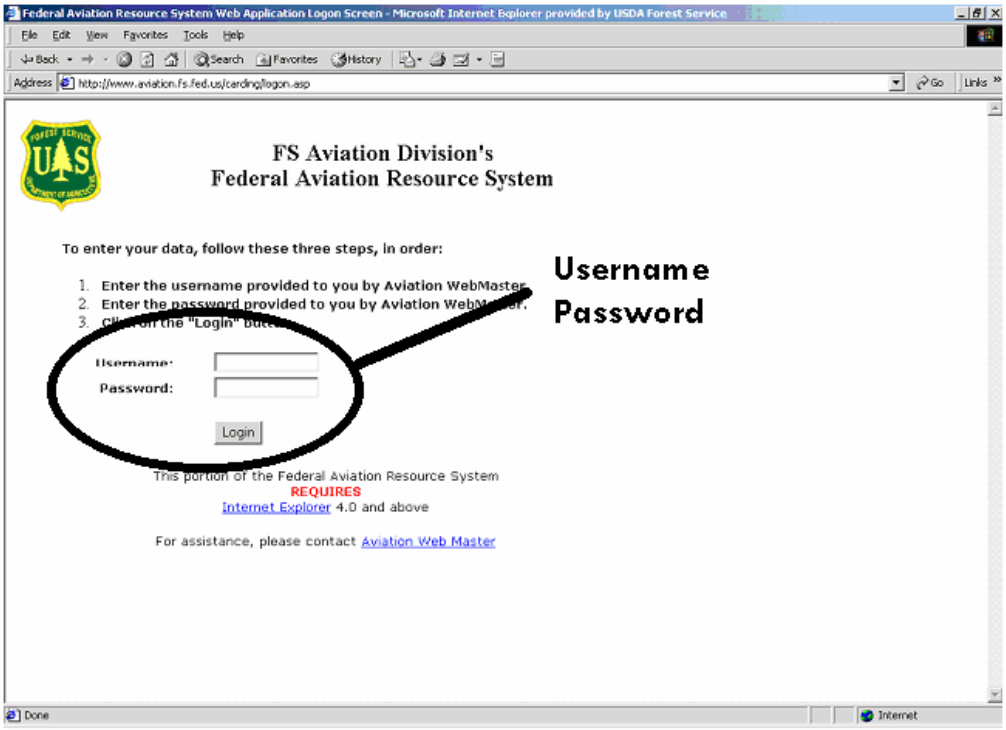
III. Federal Aviation Resources System. The Fed Resources database is the central information center for Forest Service contracted aircraft. After an aircraft is approved the aircraft information will need to be entered into the database by adding the aircraft and/or inspection information.

There are several different items that may eventually have to be updated in order to input data on an aircraft inspection performed. For instance, at times vendor and/or contract information may not already be entered in the database, for a specific aircraft. Without having the proper level of clearance, contract and vendor information may not be entered by the inspector. If this happens contact the WO to get the proper clearance, or to have them add the needed information.

The following steps show the process to enter an aircraft inspection into the database.

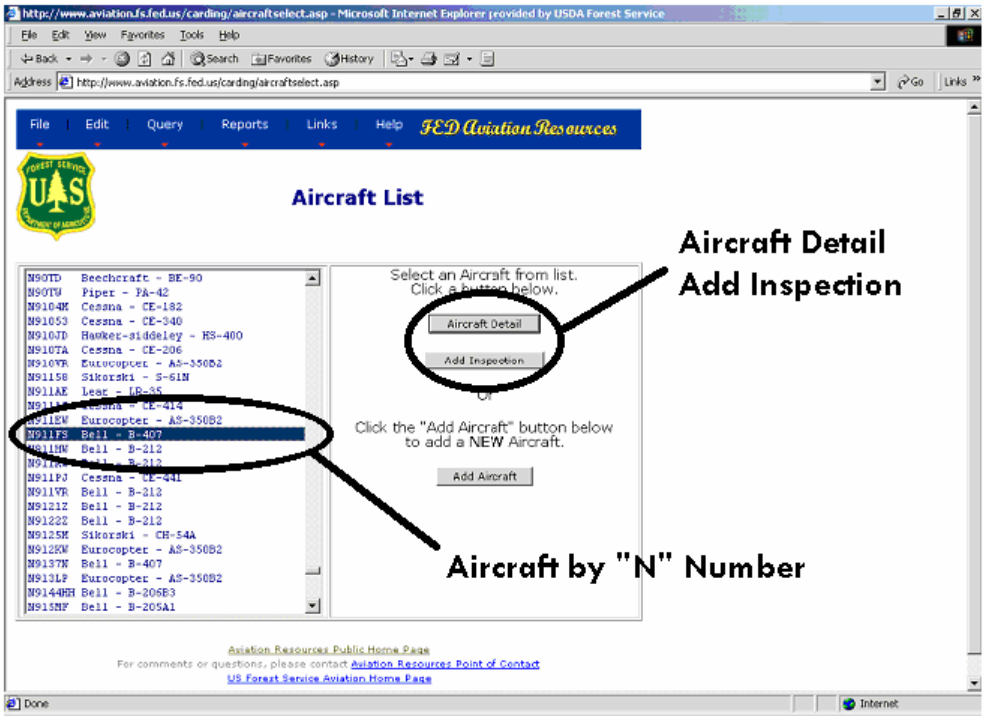
A password will be needed to enter the site. Contact the National Aviation Officer or Maintenance Manager to determine how to get a password and for help in entering information and navigating through the site.

1. Enter the website at http://www.aviation.fs.fed.us/carding/logon.asp and enter ***Username*** and ***Password,*** then ***Login.***

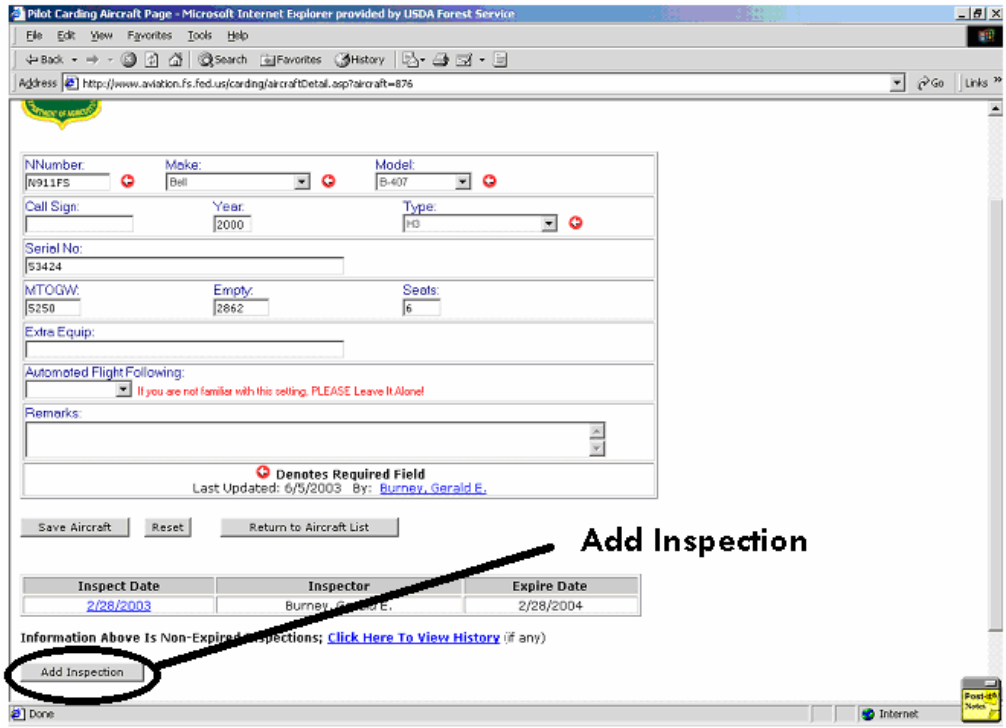


2. Select ***Aircraft*** from the ***Edit*** menu.

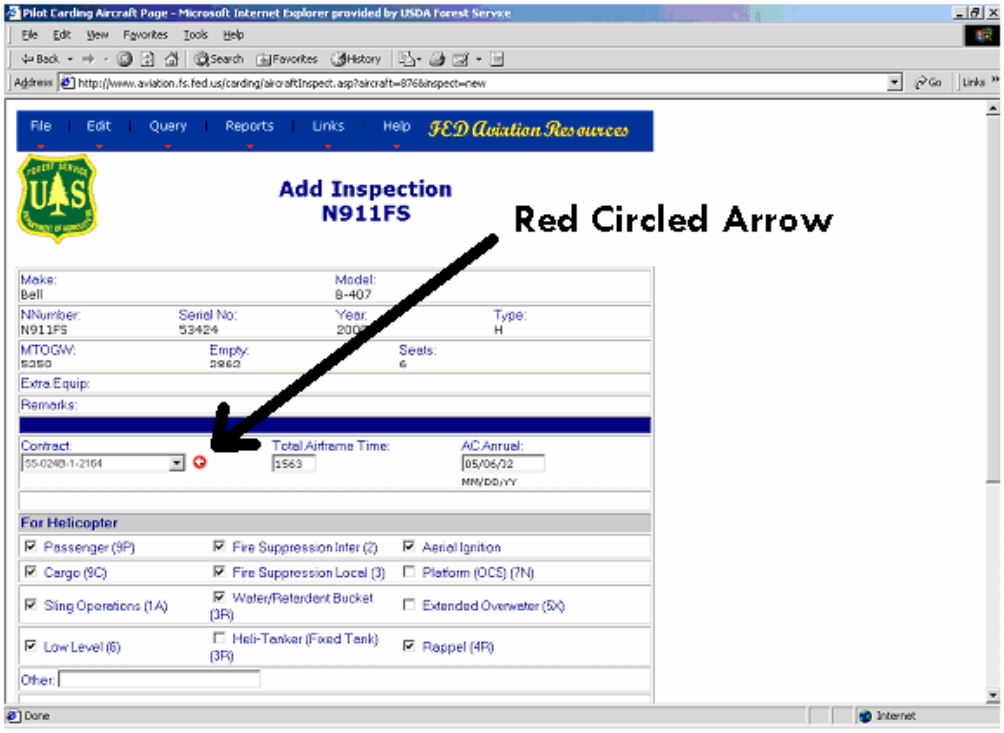
3. Scroll down and click on the aircraft to be edited. Selecting ***Aircraft Detail*** will bring up item 4 on the next page, or by selecting ***Add Inspection*** which will lead to item 5.



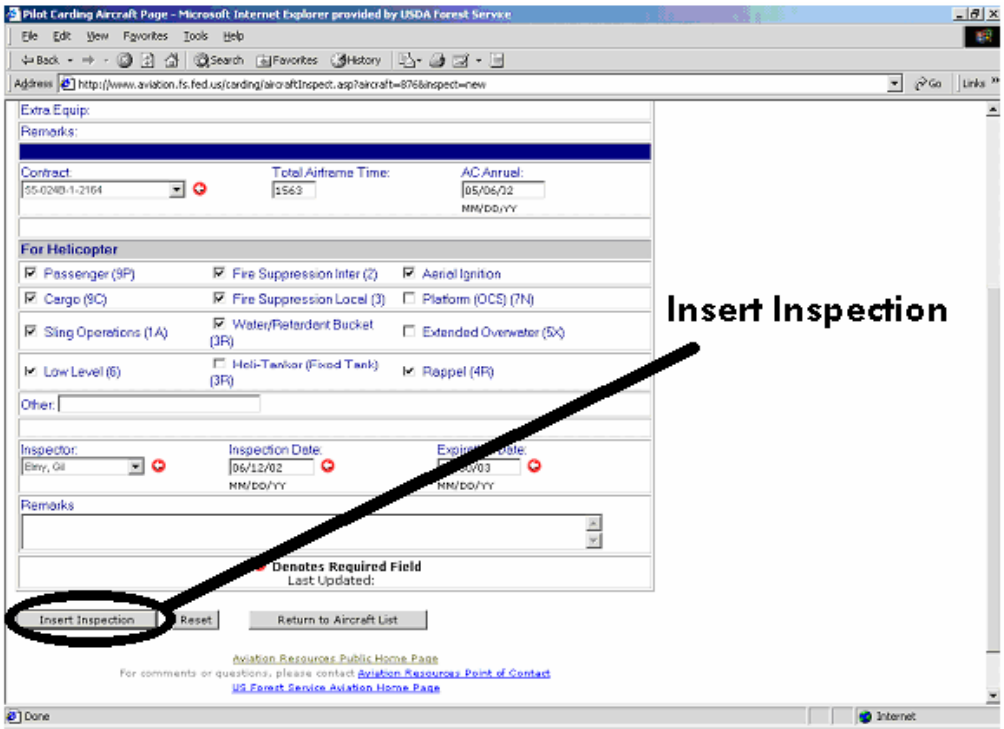
4. At the next page scroll down to the ***Add Inspection*** button.



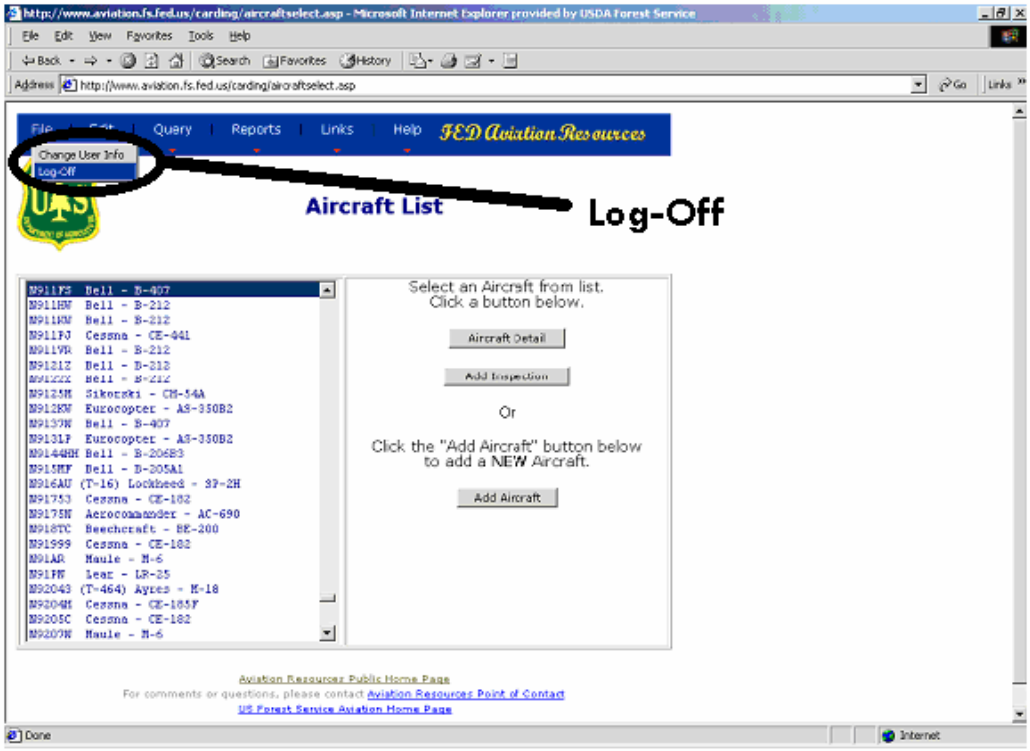
5. Enter the information as indicated. Items with ***Red circled*** arrows are required items.



6. Once the data is entered select ***Insert Inspection*** to save the information to the database.



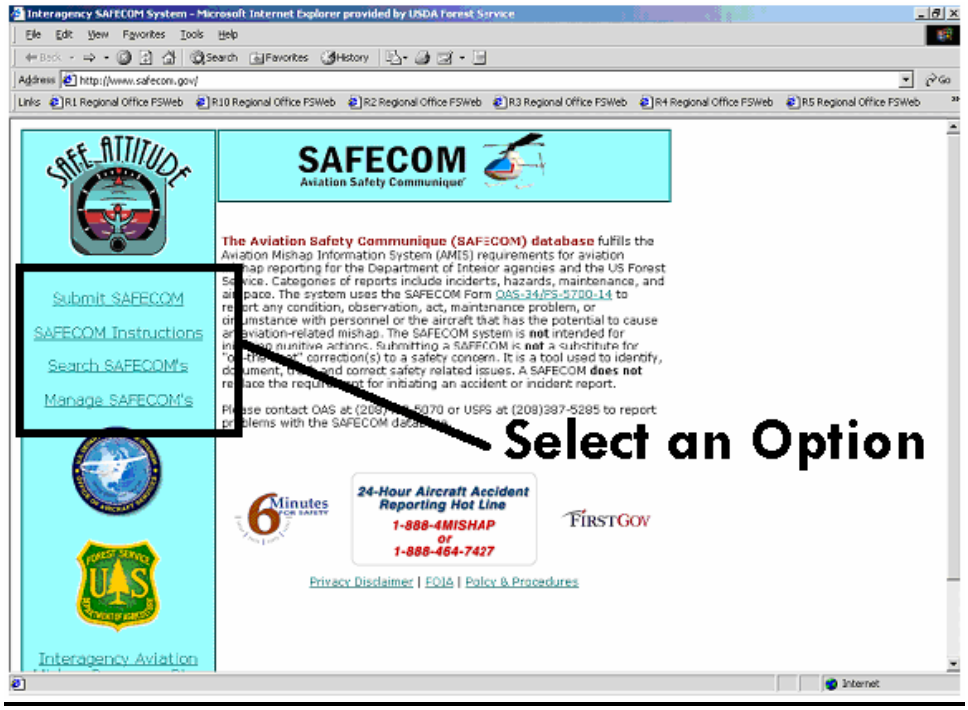
7. When finished updating database, select ***File*** and the ***Log-Off.***



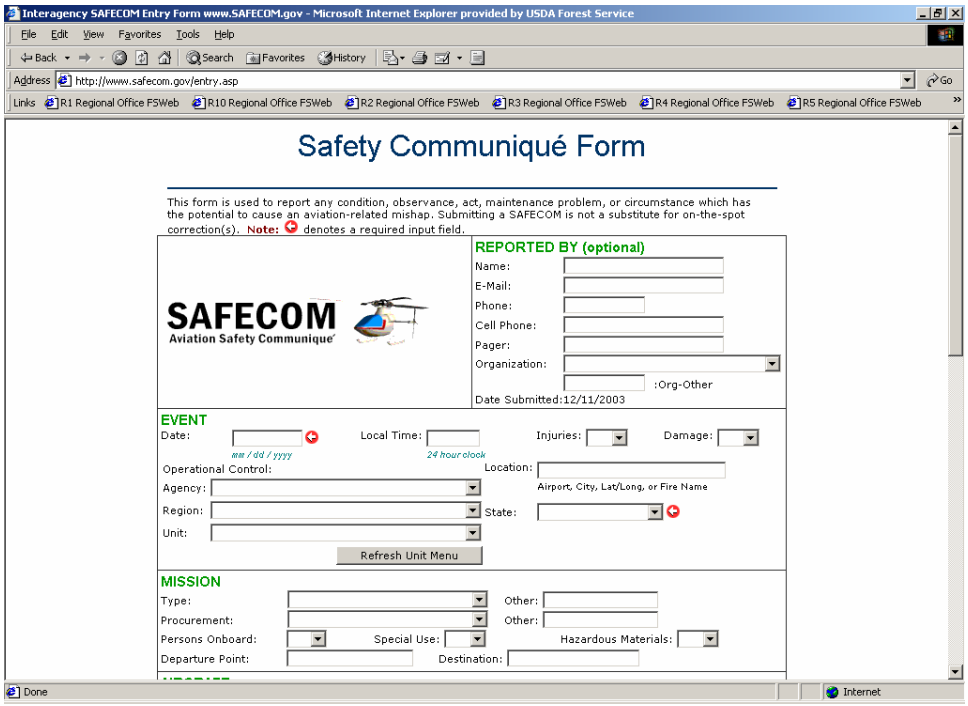
IV. Safecoms. Safecoms are used in the documentation, tracking and follow-up of corrective actions related to safety issues. A Safecom reports any condition, observation, act, maintenance problem, or circumstance with a pilot or aircraft that has the potential to cause an aviation related mishap. At some point in time inspectors will probably need to view or submit a Safecom. This section will explain the process. If access to protected areas of a Safecom is needed, a password must be requested by the Regional Aviation Safety Manager (RASM) who will coordinate that through the Washington Office in Boise.

RASM's have the responsibility to respond to Safecoms submitted in their regions. Aircraft Inspectors have a responsibility to provide follow-up information for the corrective actions on maintenance related Safecoms, when requested by the RASM.

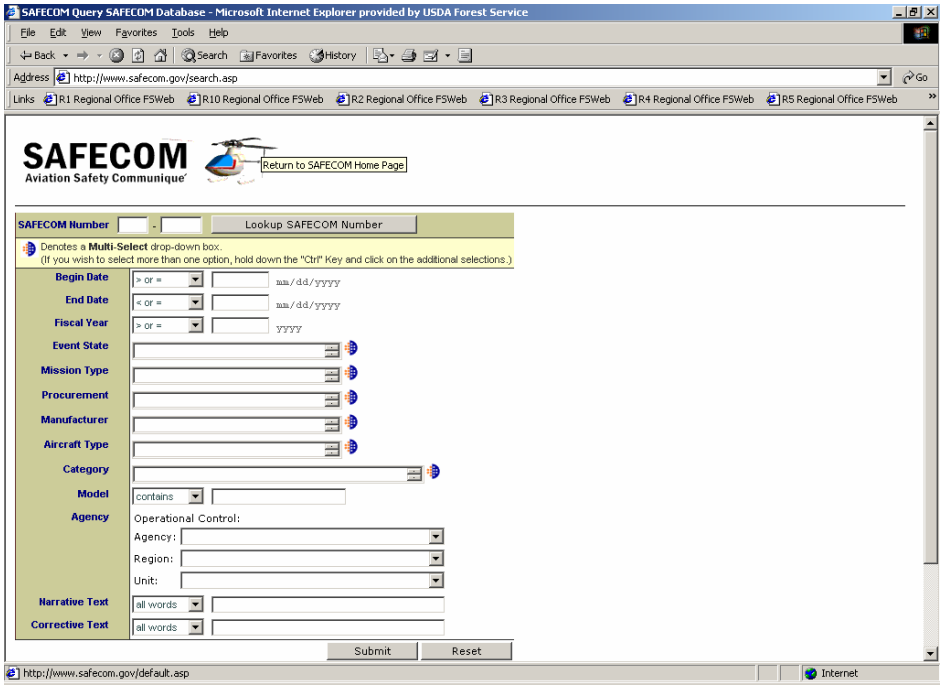
1. Enter the website at http://www.safecom.gov/, and select one of the options on the left side of the screen



2. Selecting ***Submit SAFECOM***, will bring up this screen. Fill in the information as required. Items with red arrows must be completed.



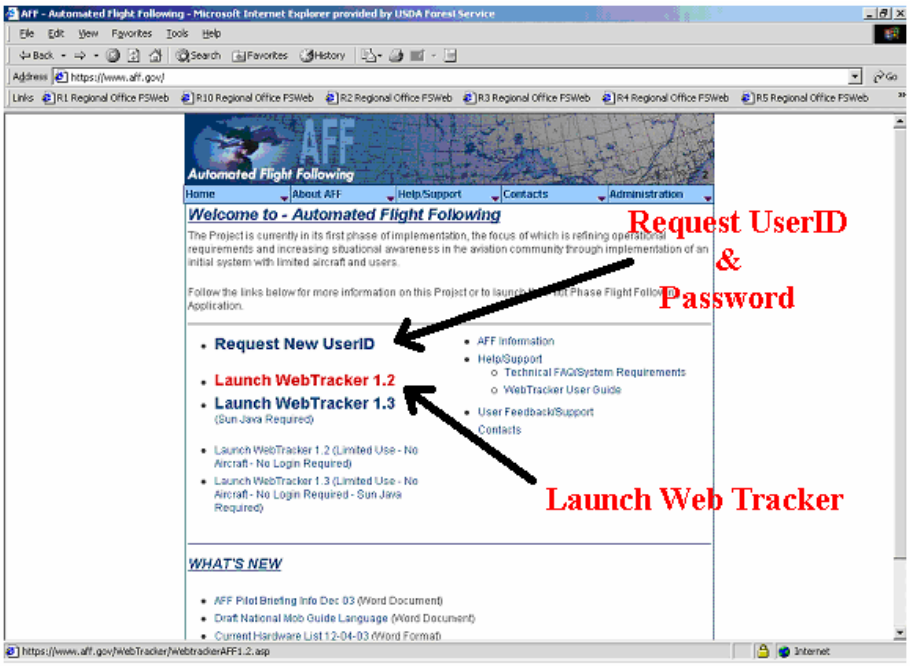
3. Selecting ***Search SAFECOM*** will bring up this screen. From here Safecoms can be viewed, depending on the type of search selected. Protected information will **not** be able to be viewed from this screen.



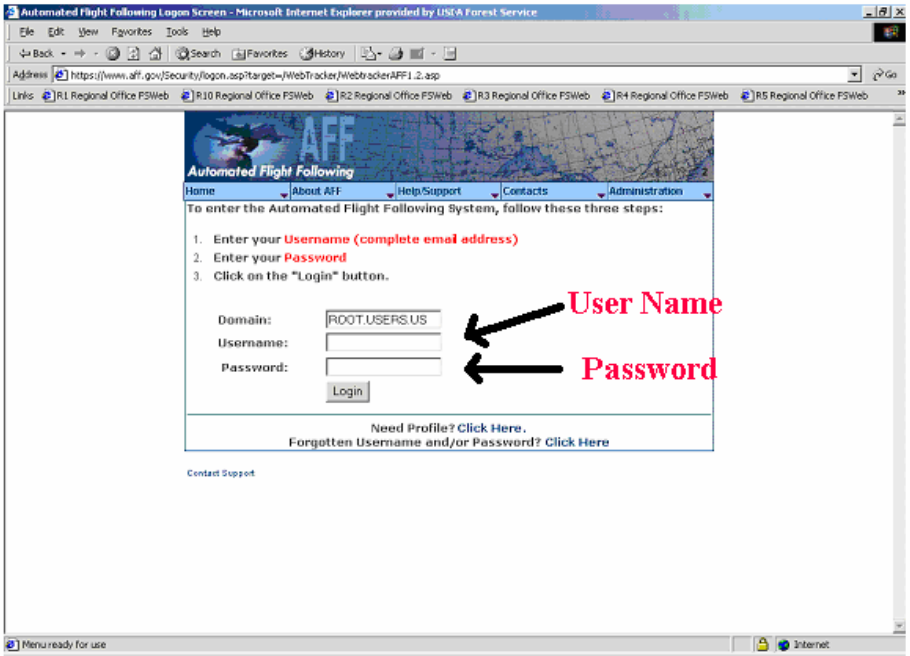
4. By selecting ***Manage SAFECOMS***, this screen will appear, which will allow access to the protected parts of Safecoms. The screen that will be accessed from this page looks similar to the previous (***Search SAFECOM's***) page.

V. Automated Flight Following. Many government and contract aircraft are now equipped with Automated Flight Following systems. This paragraph provides instructions on how to access the system. You will need to request a password before you are able to access to the site.

1. Access Web Tracker at www.aff.gov.

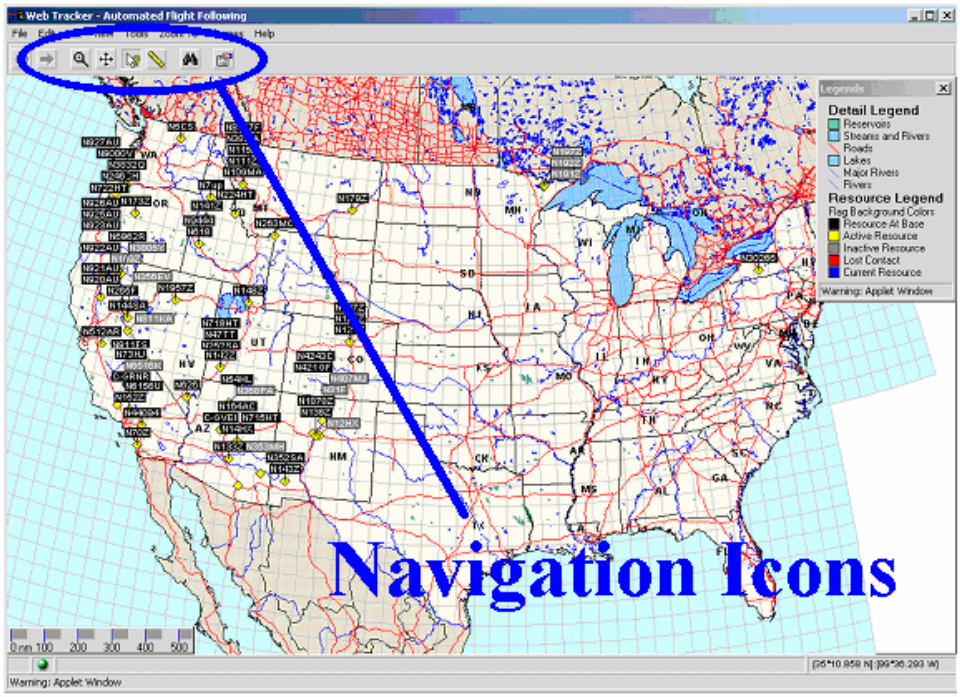


2. Enter **User Name** and **Password**. User Name will be your Lotus Notes address.

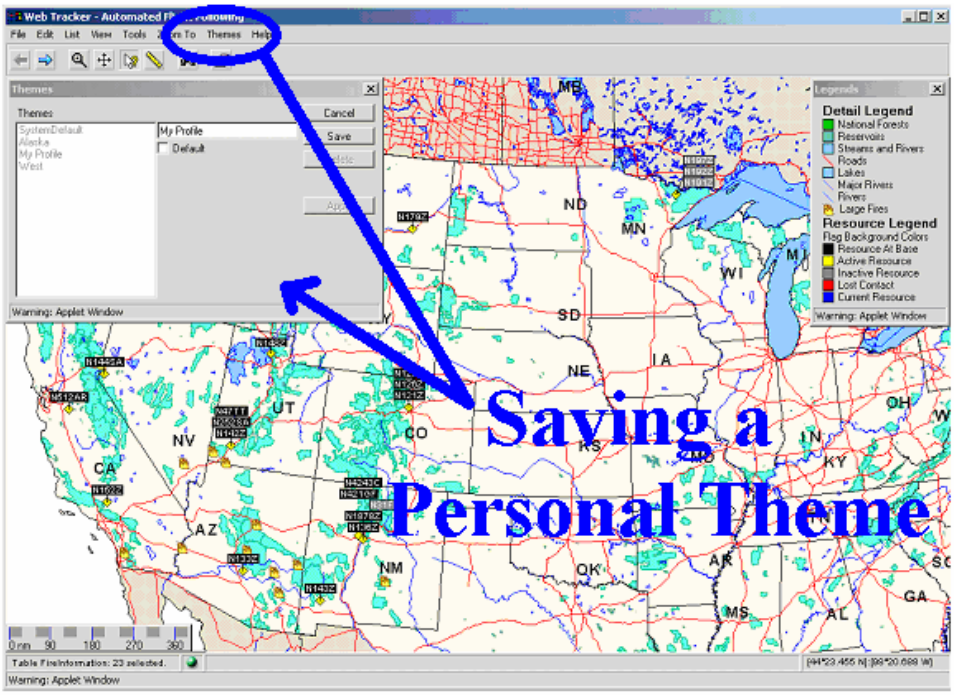


3. This screen will appear while Web Tracker is loading.

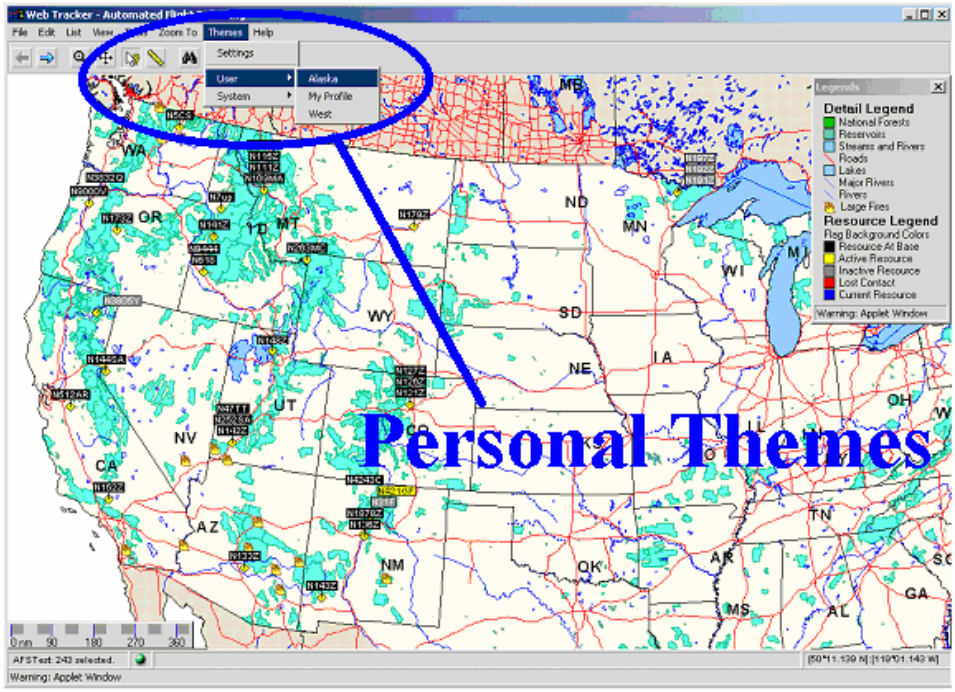
4. This is the default screen. The navigation icons can be used to zoom in on a specific area and/or identify certain aircraft, etc.



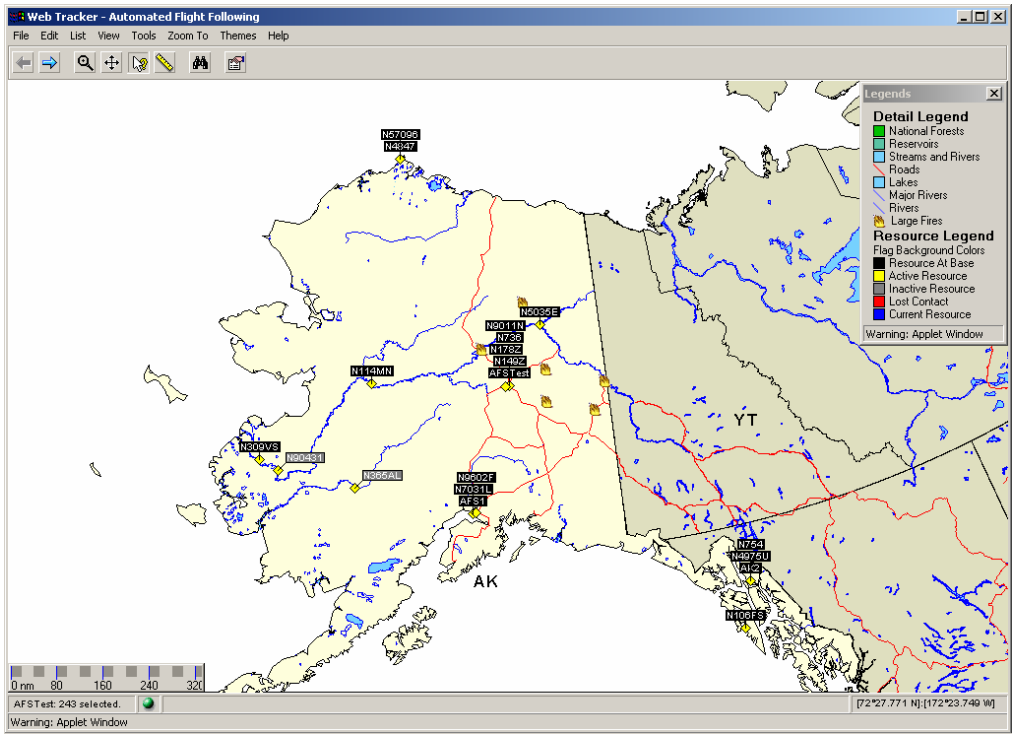
5. If only a certain section of the country and/or specific features are wanted to be displayed, you can save it as a **Theme** (Page) and then navigate to it rapidly.



6. Navigate to a previously saved **Theme**.



7. Personal Theme identified as **Alaska**.



VI. Internet Websites. The following are useful websites. Some will likely be used almost daily. Websites do change, but those listed here are current as of this printing.

1. Interagency Websites.

http://www.nifc.gov
National Interagency Fire Center Homepage

http://www.nifc.gov/news/sitreprt.pdf
National Fire Situation Report
(A great site to follow the current national fire activity)

https://aff.nifc.gov/
National Flight Following – current location of aircraft equipped for Automatic Flight Following (AFF) can be monitored.
(Registration is required to use this site)

2. Forest Service Websites.

http://www.fs.fed.us/fire/index.html
Forest Service Fire & Aviation Management Homepage

Tactical reports provide a means to determine which aircraft are operating in the region and where they are located. Not all regions have a tactical report. Known websites are listed below.

Region 1 Tactical

http://www.fs.fed.us/r2/fire/daily_resource_status.htm
Region2 Tactical Report

Region 3 Tactical

http://fsweb.ebc.r4.fs.fed.us/scripts/tactical/tactical.php
Region 4 Tactical Report

Region 5 Tactical

Region 6 Tactical

Region 8 Tactical

Region 9 Tactical

Region 10 Tactical

http://www.fs.fed.us/fire/av_safety/index.html
Forest Service Safety Website
(Access to the Forest Service SAFECOM System – a password will be needed to view protected information.) Information on how to access this information is covered in the beginning of this section.

http://www.aviation.fs.fed.us/carding/logon.asp
Forest Service Federal Aviation Resource System site
(Contract Vendor, Aircraft and Pilot database)
How to enter and retrieve data from this website was covered at the beginning of this chapter.

http://www.fs.fed.us/fire/niicd/documents
Forest Service Avionics information

http://fsweb.wo.fs.fed.us/OSOH/safety_accident_reporting.html
Copies of the Accident Investigation Guide are provided at this site

http://fsweb.mtdc.wo.fs.fed.us/aerial_ign/
Missoula Technology & Development Centers Aerial Ignition Website

http://fsweb.mtdc.wo.fs.fed.us/rappel/
Missoula Technology & Development Centers Helicopter Rappel Program

3. Aircraft Management Directorate (AMD) previously known as the Office of Aircraft Services (OAS) Websites

http://oas.windstream.com/
AMD OAS Flight Following
(Registration is required to use this site)

http://www.oas.gov/fc/
AMD (OAS) Aircraft Rental Agreement

4. FAA Websites

http://www.faa.gov/
FAA Home Page

http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgFAR.nsf/MainFrame?OpenFrameSet
Access to the Federal Aviation Regulations (FAR) Library

http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAD.nsf/MainFrame?OpenFrameSet
Access to the FAA Airworthiness Directive (AD) Library

http://www2.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/MainFrame?OpenFrameSet
Access to the FAA Advisory Circular (AC) Library

http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgMakeModel.nsf/MainFrame?OpenFrameSet
Access to the FAA Type Certificate Data Sheets (TCDS) Library

http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgSTC.nsf/MainFrame?OpenFrameSet
Access to the FAA Supplemental Type Certificate (STC) Library

http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgTSO.nsf/MainFrame?OpenFrameSet
Access to the FAA Technical Standard Order (TSO) Library

http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgOrders.nsf/MainFrame?OpenFrameSet
Access to the FAA Order Library

http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgOrders.nsf/MainFrame?OpenFrameSet
Access to FAA Order 8300.10, Airworthiness Inspector's Handbook

http://www.opspecs.com/
Access to the Master Minimum Equipment Lists (MMEL)

https://diy.dot.gov/
Website where copies of aircraft records can be ordered from Oklahoma City (Free to government agencies)

5. Miscellaneous Websites

http://www.oas.gov/oassafty/library/hazmathb0105.pdf
Current HAZMAT Guide

http://www.oas.gov/oassafty/library/E09198.pdf
Current DOT HAZMAT Exemption letter

http://www.landings.com/
A good site for aviation information including "N" Number searches

https://www.redstone.army.mil/sof/safetyform.html
Aviation Safety Messages for Military aircraft can be found here.
(There is no longer general access to this site. The user must register on the Army's AKO site to gain access.)

http://www.access.gpo.gov/cgi-bin/cfrassemble.cgi?title=200414
The complete Code of Federal Regulations can be accessed at this site

http://policyworks.gov/org/main/mt/homepage/mtt/perdiem/perd04d.html
Current Per Diem Tables can be viewed at this site

VII. 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 website listed at the bottom of the previous page, or in printed form from the Government Printing Office. The following is a list of Orders that are an excellent source of information for Aircraft Inspectors. Probably the one that will be most helpful to Aircraft Inspectors is the 8300.10, Airworthiness Inspector's Handbook, listed at the top of this page.

8020.11 Aircraft Accident and Incident Notification, Investigation and Reporting

8110.10 FAA Approvals of Major Modifications/Alterations

8110.4 Type Certification Process

8110.54 Instructions for Continued Airworthiness

8120.10 Suspected Unapproved Parts Programs

8120.11 Disposition of Scrap or Salvageable Aircraft Parts and Material

8130.2 Airworthiness Certification of Aircraft and Related Parts

8130.20 Registration Requirements for the Airworthiness Certification of U.S. Civil Aircraft

8150.1 Technical Standard Order Program

8300.10 Airworthiness Inspector's Handbook
A list of some of the more pertinent Chapters can be found in Appendix 11

FSAW – 8300.10 Airworthiness Information Bulletins

HBAW – 8300.10 Airworthiness Handbook Bulletins

8320.14 Procedures for Field Approval of Supplemental Inspection Programs for Large Transport Category Aircraft

8400.10 Air Transportation Operations Inspector's Handbook

8620.2 Applicability and Enforcement of Manufacturer's Data

8700.1 General Aviation Operations Inspector's Handbook

VIII. Other References. In order for inspectors to do their job correctly there are a whole host of publications needed on a regular basis besides the FSH 5709.16, and the FAR's. This section provides a list of the more common publications needed. Pertinent extracts from these NFPA manuals can be found in Appendix 13.

NFPA 10, Standard for Portable Fire Extinguishers

NFPA 30, Flammable and Combustible Liquids Code

NFPA 329, Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases

NFPA 407, Standard for Aircraft Fuel Servicing

NFPA 418, Standards for Heliports

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Chapter 5 – WCF Aircraft Management

I. Introduction. Working Capital Fund (WCF) aircraft are to be maintained in accordance with the Federal Aviation Regulations (FAR) and the manufacturer's recommended maintenance programs. Additionally, aircraft used for administrative passenger carrying missions will be maintained in accordance with CFR 14, Part 39, 43, 91 and 135.

WCF aircraft are "owned" by the Washington Office and registered by them through the Boise, Idaho, FAA Flight Standards District Office (FSDO). However, the WO does not manage the day-to-day operations/maintenance of the aircraft. It relies on the regions where the aircraft are assigned to perform these functions.

II. FOR/Use Rates. Some of the terms encountered when working with WCF aircraft are FOR (pronounced F-O-R) and Use Rates. The following paragraphs will define these terms to give a better understanding of what they mean.

Fixed Operating Rate (FOR). In industry, the terms "overhead costs" or "indirect costs" identify costs associated with running a business, but which produce no income in of themselves. These "indirect" costs may include insurance, hangars, crew and office personnel salaries, utilities, etc. to name a few. For WCF aircraft these are called FOR. These costs are present every day of the year regardless whether the aircraft is flown, or not. Regions must provide in their annual budgets the FOR costs for each aircraft operated.

Use Rate. In industry, "direct costs" are those expenditures that are directly related to the production of income. They may include mechanic and pilot salaries, fuel, maintenance costs, etc. Because these are directly related to income, in industry they are called "direct" costs. The term Use Rates (sometimes called Hourly Rate) is used with regard to WCF aircraft. They are basically what it costs to operate an aircraft for an hour. These costs are accrued only when an aircraft is operated. Anytime an aircraft is flown, there is a charge that has to be made, at that particular aircraft's Use Rate, against a specific Management Code (MC), be it the normal WCF Management Code, or a fire "P" Code, in order to pay for the use of the aircraft.

Note: For everything we do, purchase, or whatever, a Management Code must be used. Inspector's time is charged to an MC, the maintenance performed on an aircraft has an MC, and each fire has its own MC. Management Codes for fires are called "P" Codes.

Note: Although each region seems to have minor differences in their methods used to calculate FOR and Use Rates, for the most part they are the same. However, because there are differences, the FOR and Use Rates tend to vary, sometimes significantly between regions for the same model of aircraft. As a group, regional maintenance managers need to work closely with their accounting personnel to ensure correct rates are established.

III. Aircraft Maintenance Inspectors. Each region operating Forest Service WCF aircraft will have at least one qualified Aircraft Maintenance Inspector assigned. Presently every region has at least one WCF aircraft assigned.

Inspectors are required to ensure that WCF aircraft are maintained in accordance with the FAR's, and in standard configuration as determined by the National Aviation Operations Officer for Airworthiness and Logistics.

Inspectors must maintain a current aviation technical and FAA Regulatory library for the aircraft being operated.

Inspectors are responsible to provide oversight of the inspection programs and airworthiness of the WCF aircraft assigned to their region. They must monitor the progress of aircraft maintenance being performed by contract maintenance shops.

Never approve for return to service WCF aircraft unless they are in compliance with their type certificate, and/or standards for replacement times of life-limited parts and overhaul frequencies.

Inspectors are responsible to maintain the status of assigned aircraft at all times. Many times aircraft may be operating outside their assigned region. This does not relieve the Inspectors of the responsibility to track the status of these aircraft. Inspectors need to train their pilots to periodically provide them updates on the aircraft times and maintenance status, when they are away from their main base. Don't assume the inspector in the region where the aircraft is operating, is monitoring the aircraft. He or she may have their hands full already.

IV. Airworthiness Certificates. WCF aircraft with airworthiness certificates will be maintained in accordance with their type certificates. Aircraft without airworthiness certificates will be maintained in accordance with the inspection program approved by the National Aviation Operations Officer for Airworthiness and Logistics.

V. Public Aircraft. The definition of "Public Aircraft" can be found in FAR Part 1, Definitions and Abbreviations; Advisory Circular 00-1.1, Government Aircraft Operation; and Handbook Bulletin for Airworthiness (HBAW) 95-04. Essentially what these publications state is that when an aircraft (owned or contracted by the federal government) is operating in the fire-fighting role, these aircraft are public aircraft, and for all practical purposes the only FAR that must be followed is the operating requirements of Part 91. For other missions the aircraft have to comply with FAR Parts 39, 43 and 91. If transporting passengers or cargo for administrative purposes, Part 135 must also be followed. **However**, it is the Forest Service policy that aircraft will always operate as a minimum in accordance with Parts 39, 43 and 91 (FSH 5709.16, 11.21b).

VI. Aircraft Maintenance and Inspections. In addition to the manufacturer's recommended program, or other approved documents, all aircraft will be maintained in

accordance with FAA Airworthiness Directives (AD's), and manufacturer's Mandatory Service Bulletins (SB's).

Only FAA-approved parts and components may be installed on certificated aircraft.

Former military aircraft may use Department of Defense (DOD) approved parts and components provided the integrity of the parts can be verified.

All life-limited parts must be retired at the appropriate time.

Time between overhaul (TBO) times will be strictly adhered to.

Inspections frequencies will be adhered to, except when the National Aviation Operations Officer for Airworthiness and Logistics approves extensions, as long as safety of flight is not compromised.

VII. Maintenance Flight Check and Return to Service. WCF aircraft will not be approved for return to mission use, until a check flight is completed following any major repair or alteration that has appreciably changed the aircraft's flight characteristics or operating limits. The aircraft records will be documented with the reason for the check flight in accordance with FAR 91.407(b).

NOTE: Check flights will be performed only under Day VFR conditions, and must return to the originating base for inspection before being released for dispatch.

Check flights will be performed and documented in fixed wing aircraft records for the following:

Engine removal and replacement.

Propeller removal and replacement.

Flight control removal and replacement.

For rotor wing aircraft check flights are required following:

Engine removal and replacement.

Rotor removal and replacement.

Power train component removal and replacement.

Following replacement with a new or overhauled reciprocating engine, three hours of operation with at least two hours of continuous flight, is required.

VIII. Maintenance Records and Reporting. Each WCF aircraft will carry an FS-5700E, Aircraft Maintenance Log (see Figure 10-1), for recording flight hours, time in service, discrepancies and current inspection schedule status.

All discrepancies noted in the FS-5700E will be corrected prior to flight, or properly deferred in accordance with FAR 91.213. See paragraph IX of this chapter for a discussion on MEL Procedures.

A listing of the current status of AD's, SB's, life-limited parts and inspection status will be maintained for each aircraft. As aircraft quite often fly away from their home station, a copy of these and the current status of the aircraft should be kept with the aircraft at all times. Every attempt should be made to place an updated copy in the aircraft following every inspection, and whenever significant changes have been made.

Records of inspections, discrepancy lists and other documents such as shop workorders will be maintained at the assigned base for 24 months, or until the work is repeated or superceded.

Inspectors will report all significant maintenance deficiencies or malfunctions that might affect similar aircraft operated by the Forest Service, to the National Aviation Operations Officer for Airworthiness and Logistics.

Significant discrepancies should be submitted to the FAA on Malfunction or Defect Report forms (FAA Form 8010-4) and reported using the Forest Service SAFECOM reporting system. See Chapter 4 for details on Safecoms and how to submit them.

IX. Minimum Equipment Lists (MEL). All WCF aircraft will be operated in accordance with FAR Part 91.205 unless an approved MEL authorized by the National Aviation Operations Officer for Airworthiness and Logistics exists. Approved MEL's will be maintained in the Aircraft Flight Manual. When required the deferral procedures in the MEL and FAR 91.213 will be followed. Any discrepancy written up in the FS-5700E must be addressed (either deferred or cleared), before the aircraft can be released for further flight. An example of the instructions that are to be carried with each FS-5700E Maintenance Log on procedures to follow when deferring discrepancies is shown on the next page.

08/12/99 Rev-1

DEFERRING INOPERATIVE AIRCRAFT INSTRUMENTS AND EQUIPMENT

Numbering 5700-E Pages: **Number** pages with the last two numbers of the calendar year (98, 98, 00, etc.), followed by the page number.
Example: Numbering of first page for January 1, 1999, would be 99-1.

Placarding: Place ***"Inoperative"*** Placard Sticker on or close to inoperative instrument, equipment or system control device.

Recording the Discrepancy: **Record** discrepancies in *USDA Forest Service FS-5700E Aircraft Maintenance Log.*

> **Number** each discrepancy. In "Number Block," first discrepancy will be #1, second discrepancy will be #2 etc..
> **Record** action taken in "Corrective Action Block" indicating the instrument or equipment was removed or deactivated and placarded ***"Inoperative.***

Transferring the Discrepancy to the *Delayed Discrepancy List"*

> **Transfer** any uncorrected discrepancy to the *"Delayed Discrepancy List"* when item is deferred or when starting a new page.
> **Number** each entry on the *"Delayed Discrepancy List"* with the Page No. from 5700-E, and the number of the discrepancy from that page.
Example: 98-01-1
> **Enter** on the original log page, the letters ***"DDL"***, the "Delayed Discrepancy List No.," and the "Item No." in the "Corrective Action Block.".
Example: DDL- 1 – No. 1
> **Sign** the "Entered BY Block" on the *"Delayed Discrepancy List."*
> **Enter** current date in the "Date From Maintenance Log Block" on the *"Delayed Discrepancy List."*

Correcting the Delayed Discrepancy

> **Enter** current date in the "DATE TO MAINT. LOG Block" on the *"Delayed Discrepancy List"* when the discrepancy has been corrected.
> **Transfer** the information from the "DISCREPANCY Block" on the "*Delayed Discrepancy List"* to the current page of the *Log Book* "DISCREPANCIES Block".
> **Enter** description of maintenance action that corrected the discrepancy in the "CORRECTIVE ACTION Block.
> **Enter** your Signature and Certificate Number in the "SIGNATURE Block".
> **Remove** the "Inoperative Placard."

Figure 5-1 – Discrepancy Deferral Instructions

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Chapter 6 – Contracts

I. Introduction. This chapter provides a general overview of the potential contracting issues encountered by Inspector's. Inspector's have extensive dealings with contractor's and it is essential that they familiarize themselves with the pertinent terms and conditions of government contracts. If the general layout of government contracts is understood it is easier to find information when necessary.

Aviation contracts are written to meet the needs of our internal customers in accomplishing the mission when aircraft needs are required.

Inspectors should keep in mind an aircraft cannot be inspected or a card issued unless it has been awarded a procurement document and a request for inspection has been made by the Contracting Officer or their representative. Also, at times situations might arise where a Forest Service document like FSH 5709.16 might state a specific requirement, whereas the contract does not. The contract always takes precedence in this type of scenario.

Occasionally aircraft being inspected have multiple contracts associated with the same aircraft. For instance, a particular helicopter might be inspected for the Lolo National Forest under its specific contract while that same helicopter could be under three other contracts. The contracts could be with other forests, regions, or through the Department of Interior's Aircraft Management Directorate (AMD). To avoid duplication of effort by another inspector, the helicopter should be inspected against all four contracts – page by page, as the initial inspector may be the only one looking over the helicopter for compliance with the contract(s). Upon completion of the inspection, the inspection results should be forwarded to the appropriate AMI regional, national or DOI Inspector.

Note: The Department of Interior's Office of Aircraft Services (OAS) recently changed it's name to the Aircraft Management Directorate (AMD). Many people still refer to them as OAS, and the forms they use will probably keep their OAS numbers for quite a while. It is Forest Service policy to accept and use aircraft previously approved by AMD.

Note: For most inspectors the term FAR is used to describe the Federal Aviation Regulations. However, the FAA no longer uses that term, instead preferring to use the term 14 CFR. The reason why is, the acronym for ***Federal Acquisition Regulations*** is FAR. The Federal Acquisition Regulations have been around for over 150 years, whereas the Federal Aviation Regulations have been around for less than 50 years. In this guide the term FAR is used to describe the aviation regulations, as this is what most aviation professionals are accustomed to. However, keep in mind that FAR is the official acronym for the Federal Acquisition Regulations. Quite often when dealing with procurement personnel this is the term they use. So to avoid misunderstandings be aware of the difference.

II. Types of Contracts. When procuring aircraft there are generally three types of "contracts" normally encountered. They are; Exclusive-Use contracts, Call-When-

Needed (CWN) contracts, and Blanket Purchase Agreements (BPA's) or AMD's Aircraft Rental Agreements (ARA).

A. Exclusive-Use. For the most part aviation Exclusive-Use Contracts are used more often at the regional level. These contracts are usually for a set "mandatory availability period" (MAP), generally 90 – 120 days, when it is expected that the support of an aircraft will be needed on almost a daily basis. During the course of the contract the contractor agrees that the government will have exclusive use of the equipment in question. Because the Agency has exclusive use of the aircraft, these operators are assured a guarantee of receiving revenue for the length of the contract, so typically we pay a lower availability rate on Exclusive-Use contracts. These contracts generally have language specifying in detail the requirements of the contract. Vendors can be assessed damages under the terms of the contract if aircraft are not available as awarded.

B. Call-When-Needed. CWN Contracts are utilized by regions and the national office to support wildland fire fighting. CWN contracts are with vendors who agree to supply aircraft at their convenience, not ours. Generally the government pays a higher availability rate for CWN aircraft than it does for Exclusive-Use ships, as there are no guarantees of when or how long they might be used. Just as with Exclusive-Use contracts, CWN contracts have specific language that the contractor agrees to abide by when the aircraft is working for the government. It is recommended that inspectors acquire a copy of the National Type I & II Helicopter CWN contract and become thoroughly familiar with it, as most regional exclusive use and CWN contracts use this as the basis for developing their contracts. Becoming familiar with this contract will enable inspectors to easily find information in most contracts they will encounter. The Washington Office (NIFC) normally publishes and makes available miniature copies of this contract, which can be carried on inspection trips – it is good reference material. It is also available on the web at www.nifc.gov/contracting.

C. BPA's and ARA's. Blanket Purchase Agreements or Aircraft Rental Agreements are fairly open ended agreements with vendors to supply aircraft. They are similar to CWN contracts in that the vendor has no obligation to supply aircraft when requested. Aircraft are offered at the vendor's convenience. While some specific language can be found in BPA/ARA agreements, they are for the most part written general in nature, but do contain pertinent contract language. As a minimum, these aircraft must comply with the applicable Federal Aviation Regulations, and if used for "special missions" they must comply with the national avionics standards (See Appendix 7). Typically BPA/ARA's only address the hourly rate the government will pay while flying or on standby.

Quite often Forest Service inspectors work closely with AMD inspectors. Most of the requirements found in AMD's Aircraft Rental Agreement are similar to most Forest Service contracts/agreements, however occasionally differences are encountered. If in doubt inspector's can download a copy of the AMD Aircraft Rental Agreement at www.oas.gov/fc. A copy of the pertinent parts of the current AMD's rental agreement can be found in Appendix 8.

III. Contract Sections. Inspectors may encounter several different variations of contract formats, excluding BPA's or Rental Agreements. The two main formats they will encounter have either Sections B – L (older format), or Sections B – E (new format). The sections listed in blue follow the new format.

	OLD FORMAT	NEW FORMAT
Schedule of Items	**Section B**	**Section B**
Description/Specification/Work Statement	**Section C**	**Section C**
Packaging and Marking	Section D	N/A
Inspection and Acceptance	Section E	N/A
Deliveries of Performance	Section F	N/A
Contract Administration	Section G	N/A
Special Requirements	**Section H**	**Exhibits**
Contract Clauses	Section I	Section D
List of Attachments	**Section J**	**Exhibits**
Offer Representations and Certifications	Section K *	N/A
Instructions to Quoters and Evaluation of Offers	Section L *	N/A
Evaluation Factors for Award	Section M *	N/A
Solicitation Provisions	N/A	Section E *

Exhibits following Section C in the new format.

* see Note following explanation of Section J on page 6-5.

Sections B, C, H and J in the old format, and Sections B, C and the Exhibits in the new format, are probably the most important from an inspector's perspective. These sections contain specific contract language relative to inspector's responsibilities, and are explained in the following paragraphs.

A. Section B. This section lists requirements specific to that contract aircraft. Within this section will be found an itemized list of required equipment for the aircraft offered and the location of where it will be based. This section will also contain any special requirements the contractor must provide. It is important to review this section

during pre-use inspections to verify that the aircraft in question meets all the contract requirements. Examples of items that may be found in Section B are:

N-number identifying the aircraft awarded under the contract
Minimum seating capacity
Performance specification (i.e. 850 lb payload at 7000 ft PA and 20 degrees C.)
Bid Weight – equipped as specified under the contract
Mechanic coverage
Rappel capability
Minimum fuel capacity

These examples are listed here to provide an idea of the range of items that could be required by a contract. As previously stated, if an aircraft has not been awarded a contract, it may not be inspected nor a card issued. If upon arrival for an inspection, the vendor informs the inspector that they intend to substitute the aircraft, the contracting officer should be notified before proceeding with the inspection.

Two other very important items found in aviation contracts are aircraft performance specifications and aircraft bid weights. These are found in Section B and along with cost, are probably two of the most important considerations in "Best Value" type contracts that the Forest Service uses. If an aircraft is not able to meet the contract requirements after award, it may be cause for termination.

On the other hand, an aircraft might meet the specification, but it may weigh significantly more than when it was bid. Under these circumstances the vendor would be in non-compliance, which may be cause for termination. Under "best value" the vendor may have been awarded the contract over another vendor, due to the aircraft being evaluated by the selection panel to be able to provide more payload than its competitor. Therefore, it is a good idea to complete a Load Calc using the Performance Specification listed in Section B, to ensure the aircraft meets the spec. If an aircraft weighs more than 1% over the bid weight contact the contracting officer for a resolution. An example of how to complete a Load Calc can be found at the end of Chapter 11, Contract Aircraft Inspection Procedures.

B. Section C. For the most part Section C lists the standard requirements found in most of our Exclusive-Use and Call-When-Needed Contracts. Generally speaking the various regional helicopter contracts have similar language, normally based on the requirements found in the National Type I & II, Helicopter CWN Contract.

Many of the general requirements found in the majority of national and regional contracts are listed in Section C, such as Hobbs Meters, Locking Fuel Caps, and lighting requirements, to name a few. Other items found in Section C include General Aircraft Requirements, Avionics and Aircraft Maintenance standards and Fuel Servicing Vehicle requirements, if required by the contract in question. Personnel experience requirements/qualifications and availability/duty requirements are also normally found in

this section. Some contracts may have some of the general requirements listed above (i.e. Locking Fuel Caps) in Section B.

C. Section H. Section H, Special Contract Requirements are found in Section H. Items that might be found in Section H include cargo handling and Quick Engine Change (QEC) Kit requirements. Many special requirements for contractors operating in Alaska are listed in Section H.

Items found in Section H usually are supplemental requirements and information regarding items listed in Sections B and C. Helicopter contracts usually have supplements for Rappel Capability, Cargo Hooks, Wire Cutters, etc. in Section H.

Note: Section H is not used in the new format. Instead items previously carried in this section can now be found in the Exhibits following Section C.

D. **Section J**. This section usually contains exhibits, charts, flight rates, etc., and is the catch-all for information needed by the contractor and USFS personnel in managing/performing the contract. A great deal of information can be found in this section, from a list of the minimum items needed in a First Aid or Survival Kit, to the pin-outs for the Helicopter 9-pin connector.

Inspectors should become familiar with the items listed in Section J of the National Type I & II Helicopter CWN Contract. This information will be referenced on a regular basis. Some of the information found in it is also used in many fixed wing contracts.

Note: Section J is not used in the new format. Instead items previously carried in this section can now be found in the Exhibits following Section C.
***** Sections K, L, and M for old contracts, and Section E in the new format are ususally removed from the contracts sent out by Contracting Officers once a contract is awarded, as they only provide information to vendors on how to make their offers, and how the evaluation of offers will be made.

IV. Contracting Officer (CO), Contracting Officer Representative (COR) and Contracting Officer Technical Representative (COTR), Quality Assurance Specialist (QAS).

There are times inspectors may act as a COR or COTR on a contract, but for the most part they will normally function as a QAS.

A. Contracting Officers. CO's are the first and final authority with regard to contract compliance. The limited authority inspectors have regarding a contract must be delegated in writing by the CO. If there is ever any doubt about what may or may not be done regarding a contract, contact the CO. 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 the situation, at the earliest opportunity notify the CO. See Chapter 11, paragraph X for a discussion on removing aircraft cards.

B. Contracting Officer Representatives and Contracting Officer Technical Representatives. COR's and COTR's are delegated in writing by the CO with the authority to represent them in fulfilling the requirements of the contract. They generally are limited to ensuring that all contract clauses are complied with by the contractor and overseeing the day-to-day performance of the contract. COR/COTR's may not re-delegate their authority to another individual. All helicopters under contract to the Forest Service will have a manager assigned who acts as COR for the contract. The COR's for air tankers are the tanker base managers.

The following are common limits and authorities designated to a COR/COTR:

1. Act as the government's representative for contract administration.
2. Represent the agency in meetings concerning technical issues.
3. Maintain a COR/COTR file.
4. Assist the contractor in understanding technical requirements of the contract.
5. Monitor contractors time worked and record keeping procedures.
6. Ensure all work is in accordance with the contract requirements.
7. Advise the CO of work that is accepted or rejected.
8. Advise the CO of any changes needed in a contract.
9. Review contractor invoices for accuracy.
10. Fill out diaries on a daily basis.

The COR/COTR authority may not be re-delegated, and does not have:

1. Authority to make contract modifications.
2. Authority to obligate the government to pay any money.
3. Authority to terminate a contract.

C. Quality Assurance Specialists. QAS's assist CO's, COR's and COTR's by providing quality control, inspection services and technical advice. Aircraft and

Avionics Inspectors usually fulfill this role. Normally, the COR's appointed for helicopter and fixed wing contracts have very little aviation background. Therefore, one of the primary duties of an inspector will be to assist them in making decisions regarding contract compliance.

A final note, always remember that the government is the customer – and inspector's represent the government. At some point inspectors will probably run across a vendor who feels it is their right to supply aircraft or equipment on their terms. Don't be intimidated by them. If the vendor is not willing to supply aircraft on our terms, they are welcome to take their business elsewhere. If an un-cooperative vendor is encountered do not get into arguments with them. Instead, contact the CO and let him or her deal with any outstanding issues. Written or electronic correspondence with the CO is always helpful in these circumstances. This keeps the CO informed while documenting what happened for the inspector's records.

NOTES

Chapter 7 – Contract Aircraft Standard Requirements

I. Introduction. This chapter will list the general requirements for contract aircraft per the FSH 5709.16 (11.24). These represent minimum requirements only. Most often these requirements will be supplemented in a contract. The exception might be a Blanket Purchase Agreement (BPA) or Rental Agreement. Therefore, inspectors must be familiar with these requirements as they may not be listed in some BPA's or Rental Agreements. Do not inspect an aircraft until thoroughly familiar with the requirements of the applicable procurement document.

II. General Requirements (FSH 5709.16, 11-24a). All aircraft furnished under a contract or rental agreement must possess a standard or transport category airworthiness certificate, except for special mission aircraft such as Airtankers which only need a "restricted" category airworthiness certificate.

Note: In accordance with FSM 5713.43, the condition and equipment of Cooperator Aircraft must "provide a level of safety and mission effectiveness comparable to contract aircraft." In other words, they must meet the same standards as Contract aircraft. The following guidelines apply to Cooperator aircraft, and in the case of a helicopter offered for fire use, they must meet the requirements of the National CWN Contract.

Single engine airplanes used for special missions such as reconnaissance and survey must have a horsepower loading of <u>not more</u> 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, 36.21)

Mutli-engine airplanes must be capable of at least 200 horsepower per engine. Any engine developing less than 240 horsepower must be turbocharged.

NOTE: RAO's may grant an exemption for these horsepower requirements provided the mission does not take place over mountainous terrain (FSH 5709.16, 36.21).

Unless operated with an FAA approved Minimum Equipment List (MEL), aircraft will not be carded or used if any accessory or instruments listed in the aircraft Equipment List and Type Certificate is inoperative.

Aircraft upholstery, paint and Plexiglas will be in good condition. Inspectors must use sound judgment when making determinations of good condition.

Aircraft will 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.

New or overhauled reciprocating engines must accumulate three hours of operating time, including two hours of flight prior to Forest Service use. (This requirement was intended for piston engine aircraft, and a change was submitted by the WO to change the wording. But it got lost in the mail. Many of the contracts encountered for turbine engine aircraft require a flight check only following an engine change – which would take precedence over the 5709.16.) Some regional contracts require five hours of operating time after engine change before an aircraft can used. Always check the procurement document to determine the correct break-in period.

Agency personnel will not be carried in restricted category helicopters or those powered by reciprocating engines.

III. Equipment (FSH 5709.16, 11-24b). Aircraft used for Point-to-Point passenger and cargo operations will be equipped in accordance with the Federal Aviation Regulations and with the following minimum equipment:

FAA approved shoulder harnesses for each front seat occupant.

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

A First Aid Kit

Dual controls, if essential for initial pilot performance evaluation.

IV. Avionics. All aircraft will be equipped with the minimum avionics equipment required for visual flight rules (VFR) operations.

Per FSH 5709.16, 11-24c, two VHF-AM transceivers are required for fire operations. This is a FSH 5709.16 minimum requirement, however all contracts after January 1, 2005, require at least one **760 channel** VHF-AM transceiver. A contract will always take precedence over a 5709.16 requirement. Also, be aware there are many aircraft that do not have two AM radios. If this scenario is encountered, the aircraft may not be approved for fire use, unless the contract specifically states only one AM radio is required.

One 200 channel VHF navigation (omni directional range) receiver, per FSH 5709.16, 11-24c, although very few are contractually required to have a VOR.

Multi-engine aircraft will meet the Part 135 night and Instrument Flight Rules (IFR) passenger requirements, if dispatched for that type mission.

Government furnished avionics equipment will be maintained by authorized Forest Service employees.

Government furnished avionics equipment will be installed so as not to interfere with passenger space and comfort.

Vendors are responsible for loss or damage to Government furnished equipment, when specifically stated in the contract.

Note: See the Chapter 8 – Avionics, for more detail on the equipment requirements for special mission aircraft.

V. Contract and Rental Agreement Requirements and Approvals. Only carded aircraft approved by authorized Interagency Inspectors will be utilized.

Single engine aircraft will not be used for IFR flights. Night flights for ferry and cargo missions are authorized for single engine aircraft, if approved by the agency, at the option of the vendor. (FSM 5716.12, 5716.2 & FSH 5709.16, 11.26)

NOTES

Chapter 8 – Avionics Requirements

I. Introduction. Aircraft are a major resource used in fire fighting. Air-to-Air and Air-to-Ground coordination is essential to safe and efficient operations. Without excellent communication between the air and ground forces, effective use of resources would not be possible. This chapter addresses avionics issues and the standards required by all aviation contracts.

As technology and operational requirements change, so do the standards. As such, it's an unfortunate fact that avionics and communications technology drives many of the contract revisions. The most current national avionics standards and specifications can be viewed and downloaded at http://www.fs.fed.us/fire/niicd/documents. As mentioned in Chapter 3, avionics is a mystery to most contractors. A leaking engine or a popped rivet they can see. Over modulation, under frequency, tone level, and using the wrong radio are a little different. Companies sometimes "let slide" some things, which may bother the pilots or mechanics. Knowing the equipment and being diplomatic will go a long way.

II. Equipment Requirements. Per FSH 5709.16, 11-24c, as a minimum aircraft will be equipped for day VFR operations. For fire operations they must have two 720 Channel VHF-AM transceivers (760 Channel after January 1, 2005). Per FSH 5709.16, all aircraft must also have one 200 Channel Navigation (omni-directional range) receiver but few contracted aircraft are ever required to have one. Multi-engine aircraft must meet FAR Part 135 avionics requirements for night and IFR passenger flights.

The avionics requirements for WCF and contract aircraft vary depending on the mission involved. For contract point-to-point aircraft the Federal Aviation Regulations must be followed. For "Special Mission" aircraft, the requirements are determined by which mission the aircraft is being utilized in. All aircraft that operate beyond simply flying from point A to point B are considered Special Mission aircraft. Because they are considered Special Mission aircraft, they may be required to be equipped with additional items beyond what the FAA requires. These "additional items" allow us to inspect the aircraft thus ensuring our customers have a safe, reliable product.

Special Mission aircraft are helicopters ranging in size from a Bell 206 to a Sikorsky Skycrane; large fixed wing aircraft such as P3 Orion airtankers and deHavilland Twin Otter smokejumper aircraft; and small fixed wing aircraft from a Super Cub to a Cessna 421. All have different avionics requirements because each plays a different role on our operations.

Helicopters normally have simple avionics requirements. Almost all of the avionics requirements are listed in contract Section C. The often overlooked requirements are listed in Section B as checked off options the forest wants. These checked off options are now requirements. Options are usually spelled out in Section H. If the contractor lists an option as "available" but not "required" by the forest it should still be inspected. The helicopter still passes if the "available" options do not meet

specifications but make a note on the inspection form for the CO. The agency shouldn't pay for something it can't use.

Airtankers have some of the most complex avionics contracted for. Multiple radios, navigational aids, and audio systems are standard. Airtanker incidents have put the industry in the spotlight. This means more oversight and requirements. Consequently, the contract is constantly evolving. When inspecting airtankers go through the entire contract slowly, item by item. The Forest Service wants many things from these aircraft and some contractors don't have near the grasp of avionics as the inspectors do.

Smokejumper aircraft are almost as complex as airtankers. The big difference is government fire fighters are flying in the back. As with the airtanker, go through the smokejumper contract slowly, item by item. Smokejumpers have no problem letting someone know when something doesn't work, so save everyone some headaches and be thorough.

Small fixed wing aircraft are everywhere and used for a myriad of purposes. Uses range from bug killed tree surveys to highly demanding Air Attack missions. Small fixed wing aircraft missions come in two basic varieties: Reconnaissance and Air Attack. Reconnaissance missions are Recon (bug surveys, snow surveys, etc.) and Fire Recon (looking for smoke). Demanding Air Attack missions require an Air Tactical Group Supervisor (ATGS) to coordinate all fixed and rotary wing aircraft over an incident (i.e. fire).

Recon and Fire Recon generally don't require much in the line of avionics. As long as the aircraft can flight follow (report their position) with the local forest, not much else is needed. Air Attack missions on the other hand require navigation equipment and lots of good communications. An Air Attack's entire purpose is communication, both with other aircraft and ground personnel. If the ATGS can't be guaranteed good communications then either fail the plane or get someone else to inspect the aircraft. The ATGS has a tough job. Orbiting a single fire for three to four hours on hot turbulent days can be very difficult. That is why they need good communications and that is why inspectors need to do all they can to reduce controllable stresses in their job.

III. Required Item Background & Tips. Special Mission aircraft require several items beyond what the FAA does. Some of these items are unique to our mission and some are common aviation equipment items. This section will briefly try to explain why some items are required, when it's required, and where it's required. Most items require equipment for testing.

ELT's. The Forest Service requires ELT's be installed on all helicopters, while the FAA does not. The Forest Service does not except the exclusions allowed by 14 CFR 91.207(f). The reason is we want an operational ELT every time an aircraft flies. The terrain we often operate in is usually inhospitable. Ensure the ELT is operational, has a remote switch when required, and that the checks required by 91.201(d) are current.

Schematic and Wiring Diagrams. These are required on helicopters and airtankers. These aircraft can operate in the boonies miles from civilization. The avionics could be unique, or the aircraft can be so heavily re-wired from the original drawings that it would take a week just to figure out where the power comes from. The point is we need their services. If something is broke and a wiring problem is the cause, it could take days to get the aircraft back up without schematics and wiring diagrams. Many companies give avionics maintenance to their A&P's while on the road. These folks get enough pressure as it is. Are the schematics complete and do they cover all contractually required avionics equipment?

Aeronautical VHF-FM Radios (also called FM's). These radios are the backbone of Forest Service communications. Without an FM, the aircraft will have an almost impossible job of communicating with the forest, ground personnel, or interagency partners. Additionally, the FM is the emergency communications link to every aircraft via the Air Guard capability in each radio. Multimode (P25) digital VHF-FM radios will be required on January 1, 2010. Because heavy reliance is placed on FM radios, the type of equipment accepted is very limited. Quite often a contractor believes they have discovered a better way to build a mousetrap (i.e. FM). Corporate knowledge and common sense normally limit bad equipment from being used. Check the avionics web site for a current list of acceptable and unacceptable radios. Check frequency, modulation, tones, reception, programmability, etc.

Supplemental Radio Kits. These are slip-in radio kits giving enhanced radio capabilities to fixed wing aircraft. These type of kits are not used in helicopters. These kits may be complex enough for Air Attack work or simple enough for basic flight following. If the contractor provides a kit look it over. Does it meet the intent of the contract and standards for radios? Check the intercom, audio panels and power input. If a new style kit is accepted, it had better be acceptable to everyone.

AUX-FM Provisions. The AUX-FM is the most maligned avionics requirement we have. This is because it is seldom used and often breaks through lack of use. What the AUX-FM does is allows *any* handheld radio to be operated through the aircraft's audio system. When crews need additional communications, unique capabilities, or just any communications capability the AUX-FM is a cheap, convenient option. However, the AUX-FM has never been intended to replace an approved Aeronautical VHF-FM Radio. Bring an adapter cable and portable radio. Check for operation and antenna VSWR.

GPS. Most aircraft require a panel mounted receiver. Some small fixed wing aircraft are allowed a handheld unit but a few regions do not allow this. Data base currency is something to keep an eye out for.

Transponders, Encoders, and Static Systems. This equipment requirement is normally limited to fire aircraft. We require these items so our TCAS/TCAD equipped aircraft can "see" all other fire aircraft in their vicinity. FAR 91.411 and 91.413 logbook entries are normally an acceptable measure of operation.

Audio Control Systems. A lot of inspectors consider this requirement a no brainier until they read the contract fine print. It's amazing how missing a single sentence can screw up an entire mission and make an inspector look inept. Use headset(s) with the correct impedance and audio jack connections. Check each station, each switch, and each button.

Rappel Capability. Helicopters with rappel capability require additional communications capability. The contract spells out in detail these requirements. Just like the smokejumpers, helitack crews will have no problems letting someone know if an item was missed.

Fuel Truck FM. Helicopter fuel trucks may be required to have a mobile FM radio when section B has the option checked off or it's identified in section C. These radios are often overlooked when the fuel truck is inspected. The requirements are in sections C or H depending on who issued the contract. If it's required, the government is paying for it. Test the radio just as the aircraft's FM radio is tested.

IV. Avionics Matrixes. On the following pages are matrixes that can be used to help determine which mission(s) an aircraft may be used for. This list is based on the national standard. Forest and regional contracts are normally modified to suit the needs of the contracting forest or region. Forests and regions may increase a requirement (more stringent) but cannot lessen (weaken) a requirement.

Note: The complete National Air Attack/Reconnaissance Standards can be found in Appendix 7.

Aircraft can be configured in different ways and still meet the minimum requirements for a specific mission. For instance, on the first page of the Matrix, Recon has two columns. Looking at the two columns it will be noted an aircraft could be configured with an FM radio, intercom, and audio panel; or instead have the capability to have an Air Attack Kit installed. Either would meet the Recon standard, as long as they also had an ELT, they where equipped for Night VFR, VHF-AM and had a GPS. The same applies to the differences between the two Fire Recon columns. It would need an additional FM antenna, if it didn't have an installed FM radio. Darkened blocks in the different columns are non-required items, for the mission in question. For Air Attack Type I & II aircraft the GPS must be panel mounted.

Resource Reconnaissance and Fire Reconnaissance Matrix Reference

Equipment	Resource Recon Any column is acceptable			Fire Recon Any column is acceptable		
ELT (91.207 excluding f)						
Night VFR Lighting						
760 channel VHF-AM						
GPS (Panel-mounted or Handheld)						
Automated Flight Following (AFF) (see note 1)						
VHF-FM (see note 2)						
Intercom						
Audio Panel						
#1 AUX-FM Provisions						
#2 AUX-FM Provisions						
VHF-FM Antenna						2 each
Space for Portable Reconnaissance VHF-FM Radio Kit						
Accessory Power Source Connector						

This matrix shows minimum required avionics items on standard contracts. Contract amendments could change any requirement. Contract use, intent, and aircraft limitations are the determining factors on what is and is not required. Any aircraft with higher capability may substitute for a lesser capable aircraft. For example, a Fire Reconnaissance aircraft can substitute for a Resource Reconnaissance aircraft.

Column note: The third column for both types of aircraft categories shows one method of meeting the intent of the VHF-FM radio requirement for communications with a dispatch center. The portable reconnaissance radio kit need not be as sophisticated as an Air Attack kit. A Resource Reconnaissance radio kit may utilize a portable radio while a Fire Reconnaissance radio kit may contain either two portable radios or an aeronautical VHF-FM radio.

Note 1: AFF is required on all Forest Service special mission aircraft. AFF is required within the Department of the Interior on a Bureau by Bureau basis.

Note 2: VHF-FM – All VHF-FM aeronautical radios must be multimode (P25) digital after January 1, 2010.

Air Tactical Matrix Reference

Equipment	Type I Either column is acceptable		Type II Either column is acceptable		Type III	Type IV
ELT (91.207 excluding f)						
Night VFR Lighting						
#1 760 channel VHF-AM						
#2 760/720 channel VHF-AM						
Transponder (91.411 & 413)						
GPS (Panel-mounted or Handheld)	Panel-Mounted Only		Panel-Mounted Only			
#1 VHF-FM (see note 1)						
#2 VHF-FM (see note 1)						
#3 VHF-FM (see note 1)						
AUX-FM Provisions						
Automated Flight Following (AFF) (see note 2)						
Intercom						
#1 Audio Panel						
#2 Audio Panel for Copilot/ATGS						
Audio Jacks for ATGS Instructor with radio PTT or #3 Audio Panel						
#1 VHF-FM Antenna						
#2 VHF-FM Antenna						
Accessory Power Source Connector						
Space for Air Attack Kit						

This matrix shows minimum required avionics items on standard contracts. Contract amendments could change modify requirement. Contract use, intent, and aircraft limitations are the determining factors on what is and is not required. AFF requirements are determined by regional policy. Any aircraft with higher capability may substitute for a lesser capable aircraft. For example, a Type I Air Tactical aircraft can substitute for a Type III Air Tactical or Fire Reconnaissance aircraft.

Note 2: VHF-FM – All VHF-FM aeronautical radios must be multimode (P25) digital after January 1, 2010.

Note 1: AFF is required on all Forest Service special mission aircraft. AFF is required within the Department of the Interior on a Bureau by Bureau basis.

Airtanker/SEAT/Helo/Smokejumper Matrix Reference

Equipment	Airtanker	SEAT	Helicopter Type 1	Helicopter Type 2	Helicopter Type 3	Smokejumper
ELT (91.207 excluding f)						
Schematics & Wiring Diagrams						
#1 760 channel VHF-AM						
#2 760 channel VHF-AM		760/720				
#1 VHF-FM (see note 1)						
#2 VHF-FM (see note 1)						
AUX-FM Provisions						
GPS (Panel Mounted Only)						
Transponder/Encoder/Static System						
#1 VOR/ILS System						
#2 VOR						w/ILS
Marker Beacon						
ADF						Or IFR GPS
DME						
TCAS/TCAD						
Automated Flight Following (AFF)					(see note 2)	(see note 2)
#1 Audio Panel						
#2 Audio Panel						
#3 Audio Panel	Or Check Pilot ICS		Rappel only (see note 3)	Rappel only (see note 3)	Rappel only (see note 3)	Spotter
Intercom (ICS)						
Cockpit Voice Recorder						
Detection System (e.g. RADAR)						
Flight Data Recorder						+20 PAX
Public Address System						
Accessory Power Source Connector (3 pin)				Standard Category only		
9-Pin Cargo Hook Connector				Ex Use Only		

This matrix shows minimum required avionics items on standard contracts. Contract use, intent, and aircraft limitations are the determining factors on what is and is not required. Contract amendments could modify any requirement. Helo Type III contract language is tailored to meet local needs.

Note 1: VHF-FM – All VHF-FM aeronautical radios must be multimode (P25) digital after January 1, 2010.

Note 2: AFF is required on all Forest Service special mission aircraft. AFF is required within the Department of the Interior on a Bureau by Bureau basis.

Note 3: Rappel/Shorthaul #3 audio panel may not be needed depending on cabin configuration.

Acceptable VHF-FM Radios

Only VHF-FM radios designed for aeronautical use are acceptable. Acceptable radios must be capable of a nominal 10 watts power output, have separate main and Air Guard receivers, display frequency and/or channel alphanumerics, transmit CTCSS tones, be capable of at least 15 preset channels, and be operator (e.g. pilot) programmable while in flight just to name a few of the requirements. Radios in Air Tactical aircraft must be capable of scanning if only one VHF-FM radio is installed. Note: Operator programmability does not refer to devices (i.e. computers) external to the radio.

Note: Photos of acceptable radios can be found in Appendix 3, Avionics Special Equipment.

The following aeronautical VHF-FM radios are acceptable until December 31, 2009:

- **Eureka Radio Systems:** ERS-96000NB with an external CTCSS tone encoder.
- **Northern Airborne Technology:** NPX138N-050, NPX138N-070, and NTX138-050.
- **Technisonic Industries:** TFM-138 (serial number 1540 & up), TFM-138B/C/D, TDFM-136, and TFM-500.
- **Wulfsberg Electronics:** Flexcom II, RT-138 with narrowband modification, and RT-9600 with narrowband modification.

The following aeronautical VHF-FM radios are known to be acceptable on January 1, 2010:

- **Technisonic Industries:** TDFM-136.

Some examples of VHF-FM radio types that are NOT ACCEPTABLE:

- Any non-aviation radio (e.g. portable or mobile).
- Any radio not being both wideband and narrowband capable.
- **Bendix-King: KFM-985 (Acceptable for Non-Fire ONLY)**
- **Wulfsburg Electronics:** Flexcom II with P25 modification (has no Air Guard receiver).

As technology advances, this list will change. A current list of acceptable radios can be found on the avionics website and in the current copy of the Type I & II Helicopter CWN contract.

Some examples of AFF's that are ACCEPTABLE:

Guardian Mobility*****
Blue Sky
Skyconnect
SkyTrac*****
Latitude Technology (Iridium, Global Star*****)
Ouerlink*****

*** Lower 48 Only**

NOTES

Chapter 9 - FAA Operating Specifications

I. Introduction. All 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 Parts 135 and 137 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) for Part 135 operators (and in some cases are now issuing Ops Specs for Part 133 and 137 Operators) that provide them with the guidelines under which they may operate. They consist of specific terms, conditions and limitations under which the certificate holder must operate. Ops Specs are as legally binding on the operator as the FAR's. The Ops Specs provide a listing of the aircraft the certificate holder may use for hire, along with any additional requirements the FAA mandates. It is therefore essential that inspectors be familiar with the location and type of information that can be found in Ops Specs. Per FAR 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 different items found in **Part D – Aircraft Maintenance**, and **Part A – General**, of the certificate holders Ops Specs, pertinent to the inspectors duties. The FAA is now issuing Ops Specs electronically, and normally the FAA Inspectors will sign them electronically, so original signatures will very rarely be found on these documents anymore. Samples of both methods can be found in the examples provided.

Note: The information provided in this chapter is for most of the vendors used by the Forest Service. A few vendors used by the Forest Service operate aircraft in the 10 or More Passenger category. There are additional operations specifications for these operators. If you have operators in this category you should become familiar with the additional requirements listed in D072, Aircraft Maintenance – Continuous Airworthiness Maintenance Program (CAMP) Authorization; D076, Short-Term Escalation Authorization; D084, Special Flight Permit with Continuous Authorization to Conduct Ferry Flights; and D088, Maintenance Time Limitations Authorization.

II. Table of Contents. The Table of Contents will list the pages that should be present in a vendors Ops Specs. The simplicity of this statement may be questioned, but some valuable information is provided on this page. Figure 9-1, shows an example of a Table of Contents page. From this 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). By the same token, if a page number is showing an effective date and amendment number as in the example in Figure 1, but page D104 - Additional Maintenance Requirements – Emergency Equipment is missing, the reason why should be questioned.

III. D073 – Approved Aircraft Inspection Program (AAIP). The D073 will list the aircraft that are approved to be inspected under a AAIP. Figure 9-2, shows an example of a D073. 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 only one may be approved for the AAIP.

IV. D085 – Aircraft Listing. 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 can not be carded. For Point-to-Point aircraft, this will be the only document that will normally need to be checked. For Part 133 and 137 Operators, if the FAA has issued Ops Specs, the D085 is the only Maintenance Ops Spec presently being issued. An example of the D085 is shown in Figure 9-3.

V. D095 – Minimum Equipment List (MEL) Authorization. Figure 9-4, is an example of one page of a 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 MEL's will be listed. Normally it should also list the MMEL it was derived from, along with the approval date for the MEL in question, although these are sometimes left off. Ensure that MEL's carried in aircraft are approved for that specific type aircraft.

Inspectors may encounter aircraft with only Part 91 MEL's for leased aircraft. **A Part 91 MEL is not valid unless it has a Letter of Authorization approving the MEL, signed by both the FAA and Operator, and many FSDO's are beginning to issue Part 91 Ops Specs with D095 MEL Authorizations.** Beginning on Page 9-14 are instructions for downloading MMEL's from the FAA Ops Specs website.

VI. D101 – Additional Maintenance Requirements – Aircraft Engine, Propeller, and Propeller Control (Governor). 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, TBO's, and maintenance documents that must be utilized by the operator. Figure 9-5 shows an example of one page of a D101.

VII. D102 – Additional Maintenance Requirements – Rotor. On these pages will be listed the engine, main and auxiliary rotor TBO times, and maintenance manuals for helicopter operators. Figure 9-6 shows a sample of a D102.

VIII. D104 – Additional Maintenance Requirements – Emergency Equipment. Maintenance requirements for emergency equipment such as oxygen bottles, fire extinguishers, etc., are listed in the D104. An example is given in Figure 9-7.

IX. D485 – Aging Airplane Inspection and Records Review. The D485 identifies aircraft that are required to have inspections and record checks in accordance with FAR 135.422. Essentially, multi-engine aircraft used in Scheduled Operations, that are more than 15 years old require an initial and recurring inspections every 7 years. An example of a D485 is shown in Figure 9-8 and 9-9.

XI. A015 – Autopilot in Lieu of Required Second-in-Command. This is the one page that may possibly need to be checked in Part A of the Ops Spec, to determine if an airplane is authorized to operate single pilot. See Figure 9-10.

XII. A046 – Single Engine IFR (SEIFR) Passenger-Carrying Operations Under CFR Part 135. 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 FAR 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.

XIII. 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 or "L" for Rotorcraft External - Load operator.** 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 FAR 119.9.

XIV. Other Ops Spec Pages. These are some of the other Ops Spec pages that may be encountered depending on the operator. A listing of all the Maintenance Ops Specs the FAA issues can be found in FAA Order 8300.10, Volume 2, Chapter 84.

A-16 Single Pilot
D-72 Continuous Airworthiness Maintenance Program Authorization
D-74 Reliability Program Authorization – Entire Aircraft
D-75 Reliability Program Authorization – (Parts of Aircraft)
D-76 Short Term Escalation
D-84 Special Flight Permits
D-88 Maintenance Time Limitations Authorization
D-89 Maintenance Time Limitations Section

U.S. Department of Transportation
Federal Aviation Administration

Operations Specifications

TABLE OF CONTENTS

Part D – Aircraft Maintenance

Print Date: 07/15/2003 CERTIFCATE NO: WOKA285D

OK CORRAL AVIATION, INC.

Figure 9-1 – Table of Contents

U.S. Department of Transportation
Federal Aviation Administration

Operations Specifications

D073. Approved Aircraft Inspection Program (AAIP)

HQ Control: 02/20/98
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. Scrud

Scrud, Uriah R. Principal Maintenance Inspector NR09

3. Date Approval is Effective: 09/09/2002 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: 09/09/2002

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

U.S. Department of Transportation
Federal Aviation Administration

Operations Specifications

D085. Aircraft Listing

HQ Control: 02/06/98
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
Scrud, Uriah R.
Principal Operations Inspector

4. Date Approval is Effective: 04/18/2004 Amendment 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

Figure 9-3 – D085 Aircraft Listing

U.S. Department of Transportation Federal Aviation Administration — Operations Specifications

D095. Minimum Equipment List (MEL) Authorization **HQ Control: 08/15/97** **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, MMEL 10/04/04, MEL 10/31/05
Cessna 421C, MMEL 10/02/01, MEL 02/28/02
Cessna 421B, MMEL 10/02/01, MEL 04/17/03

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 ands 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: 12/08/2005 D095-1 CERTIFCATE NO: WOKA285D
OK CORRAL AVIATION, INC.

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

U.S. Department of Transportation
Federal Aviation Administration

Operations Specifications

D101. Additional Maintenance Requirements – Aircraft Engine, Propeller, and Propeller Control (Governor

HQ Control: 08/22/00
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 turbosuperchargers, 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	Maintenance Document	Time-in-Service Interval	Make & Model	Maintenance Document	Time-in-Service Interval	Make & Model	Maintenance Document	Time-in-Service Interval
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

Figure 9-5 – D101 Additional Maintenance Requirements Aircraft Engine, Propeller and Propeller Control (Governor)

U.S. Department of Transportation Federal Aviation Administration — Operations Specifications

D102. Additional Maintenance Requirements – Rotor

HQ Control: 08/22/00
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:

a. Rotor. Each installed main and auxiliary rotor shall be maintained in accordance with the manufacturer's maintenance documents listed in the following table.

Rotor

Airplane Type	Engine			Rotor Main and Auxiliary
M/M/S	**Make & Model**	**Maintenance Document**	**Time-in-Service Interval**	**Maintenance Document**
Bell 407	Allison 250-C47B	CSP 21001	2000 Hours	BHT-407-MM
Bell 206	Allison 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. Scrud

Scrud, Uriah R. Principal Maintenance Inspector NR09

3. Date Approval is Effective: 09/15/2001 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: 09/15/2001

U.S. Department of Transportation
Federal Aviation Administration

Operations Specifications

D104. Additional Maintenance Requirements – Emergency Equipment

HQ Control: **08/22/00**
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		

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

D485. Aging Airplane Inspection and Records Review

HQ Control: 11/12/03
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 activationg the prargraph!*

(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.

b. 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 complete

Figure 9-8 – D485 Aging Airplane Inspection and Records Review

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.

f. Process the paragraph and a ctivate 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's 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

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

U.S. Department of Transportation
Federal Aviation Administration

Operations Specifications

A015. Autopilot in Lieu of Required Second-in-Command

HQ Control: 04/30/98
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: 09/27/2001 Amendment Number: 8
4. I hereby accept and receive the Operations Specifications in this paragraph.

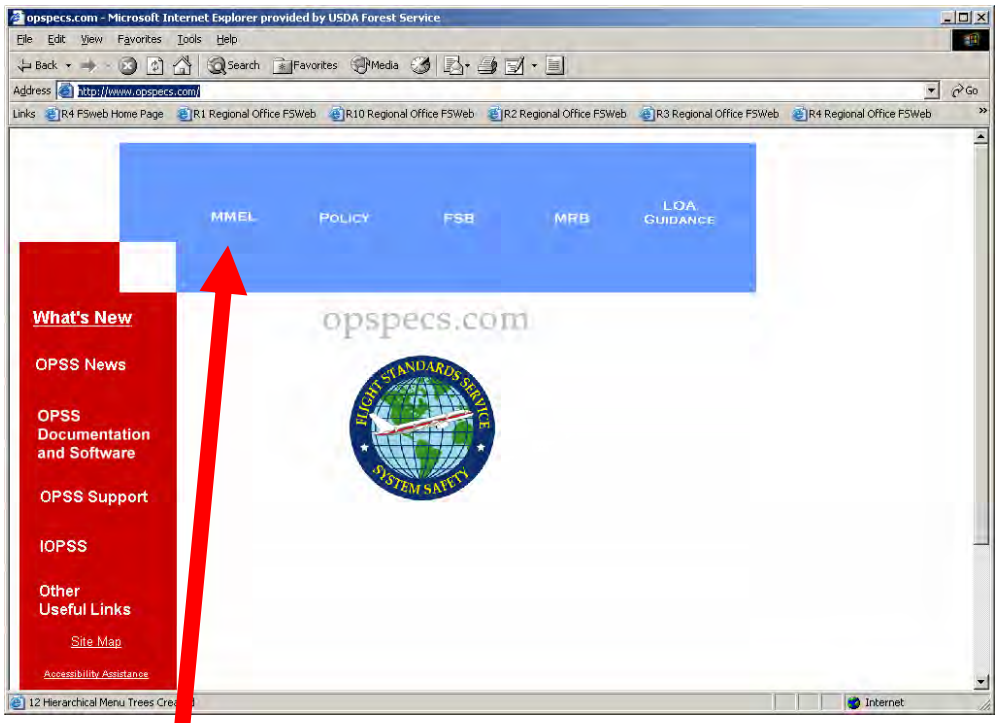
I.M. Kool

Kool, Igor M. Director of Maintenance Date: 09/27/2001

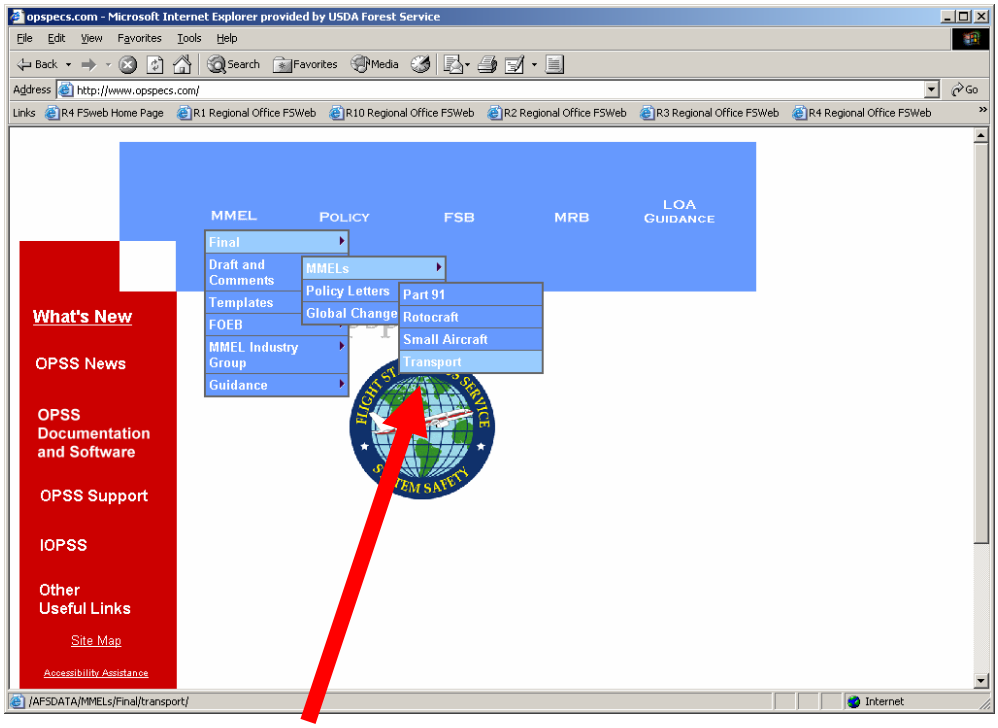
Print Date: 07/10/2003 A015-1 CERTIFCATE NO: WOKA285D
OK CORRAL AVIATION, INC.

Figure 9-10 – A-015 Autopilot in Lieu of Required Second-in-Command

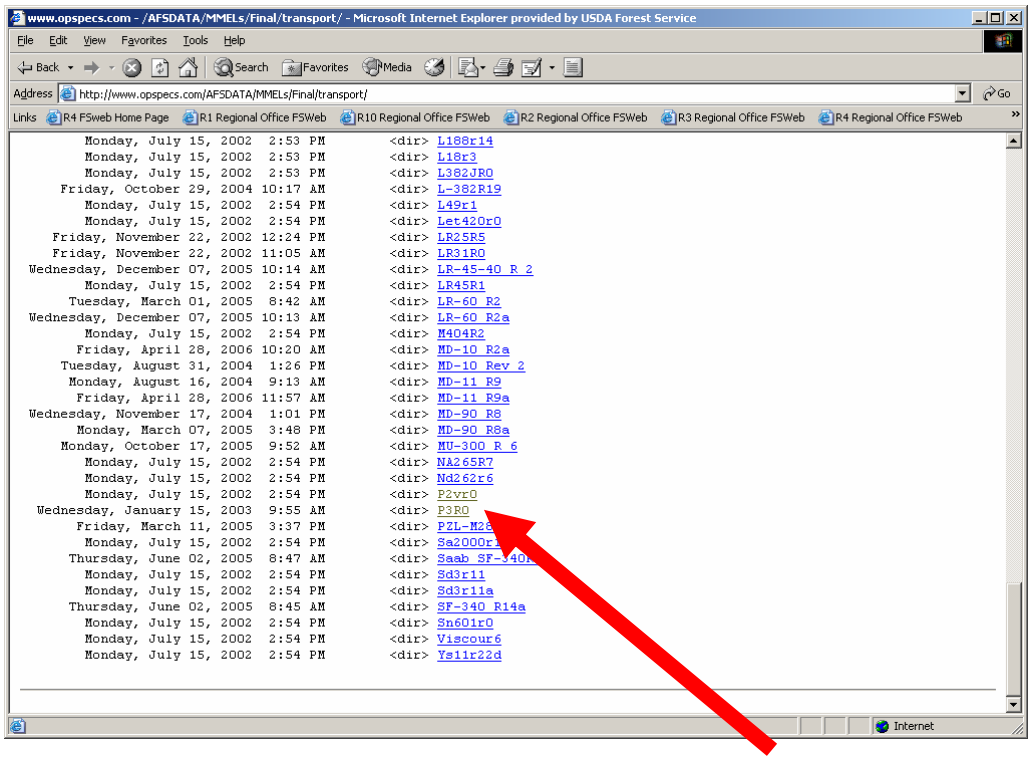
Master Minimum Equipment Lists (MMEL)
http://www.opspecs.com



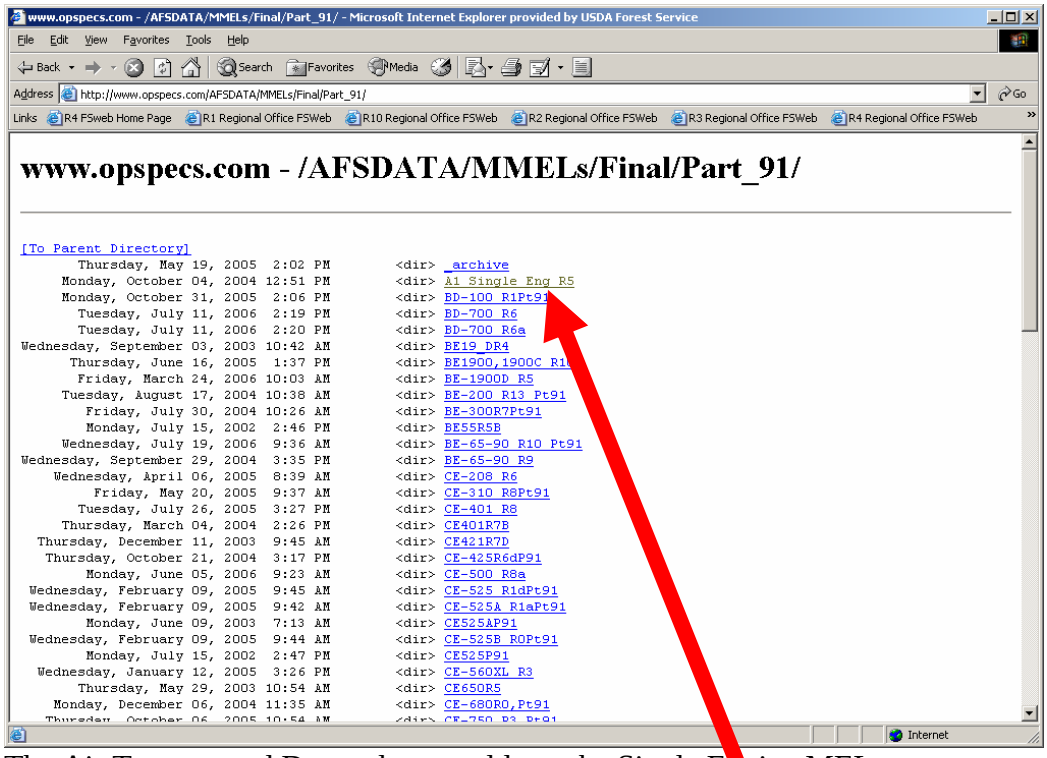
Select **MMEL**



Your Options are **Part 91, Rotorcraft, Small Aircraft or Transport**.



If you select **Transport**, and scroll down, these two are the 2 for the P2V & P3.



The Air Tractors and Dromaders would use the Single Engine MEL.

NOTES

Chapter 10 – Forest Service Forms

I. Introduction. There are numerous forms inspectors use on a frequent basis. Most are Forest Service forms, however as inspectors work closely with the Department of Interior's, Aircraft Management Directorate (AMD), formerly known as the Office of Aircraft Service (OAS), inspectors need to be familiar with the forms they use, as aircraft approved by them are accepted by the Forest Service.

The following is a list of the forms used by inspectors in the performance of their duties. The associated AMD forms are listed below the Forest Service form. Samples of the Forest Service forms are shown on the following pages. The Aircraft Management Directorate forms (OAS Forms) can be found in Appendix 9.

Figure 10-1 FS-5700E Aircraft Maintenance Log

Figure 10-2 FS-5700-4 Aircraft Approval Card (Airtankers)
OAS-36C, Aircraft Data Card (Airtanker) (Appendix 9)

Figure 10-3 FS-5700-21 Airplane Data Record
OAS-36B, Aircraft Data Card (Helicopter) (Appendix 9)

Figure 10-4 FS-5700-21a Helicopter Data Record
OAS-36A, Aircraft Data Card (Fixed-wing) (Appendix 9)

Figure 10-5 FS-5700-32 Aircraft Contract Status Report

Figure 10-6 FS-5700-33 Aircraft Pre-use Inspection Discrepancy Report

Figure 10-7 Point-To-Point Aircraft Data Card (Forest Service)
OAS-47 EDP, Aircraft Data Card (Appendix 9)

Figure 10-8 Service Truck – Interagency Data Card

Figure 10-9 Mechanic Qualification Form

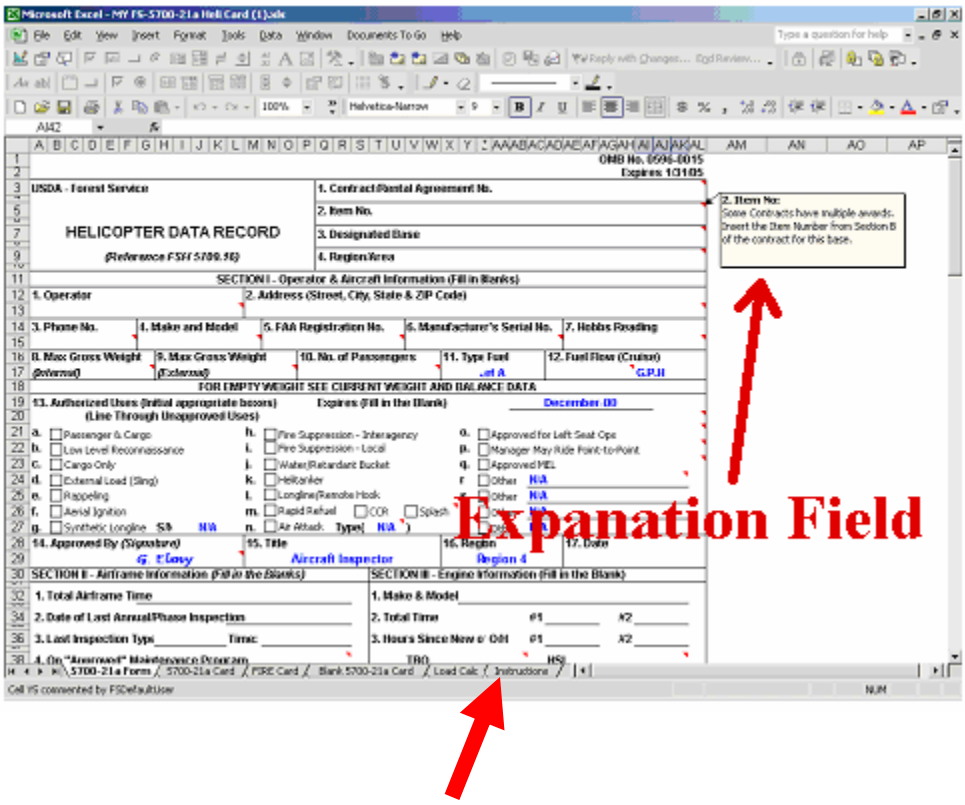
Figure 10-10 Mechanic Qualification Card

Figure 10-11 FS-5700-17 Interagency Helicopter Load Calculation
OAS-67 **This is actually the same form as the FS-5700-17**

Note: The old FS-5700-21 & 21a aircraft forms/cards had the upper top portion of the form made of card stock, which was detached and given to the operator. Per the Paper Reduction Act, the new versions will only be available in electronic form, either in Word, Excel, or pdf format. This will enable inspectors to print them out and hand print, or electronically fill out the forms.

For the FS-5700-4 Airtanker and the Point-to-Point cards the original is given to the vendor for placement in the aircraft and the carbon copy is placed in the contract file.

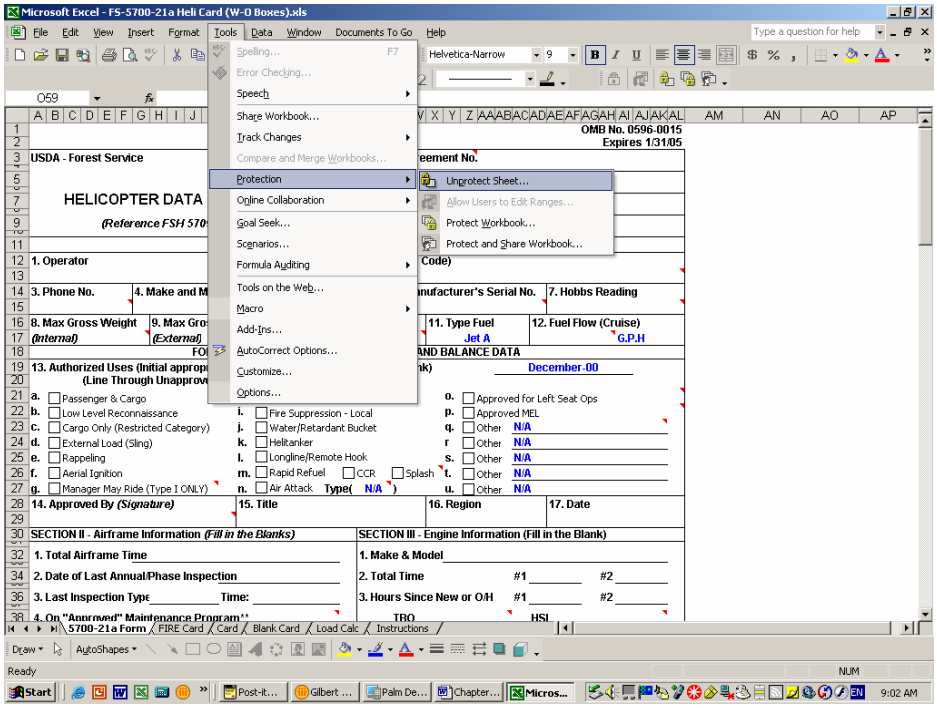
An explanation of how to fill out the FS-5700-21 and -21a can be found in Appendix 4. **Also in the Excel version, by placing the cursor over the red triangle in the various fields, text boxes will appear which explain the data that should be entered. See example below.**



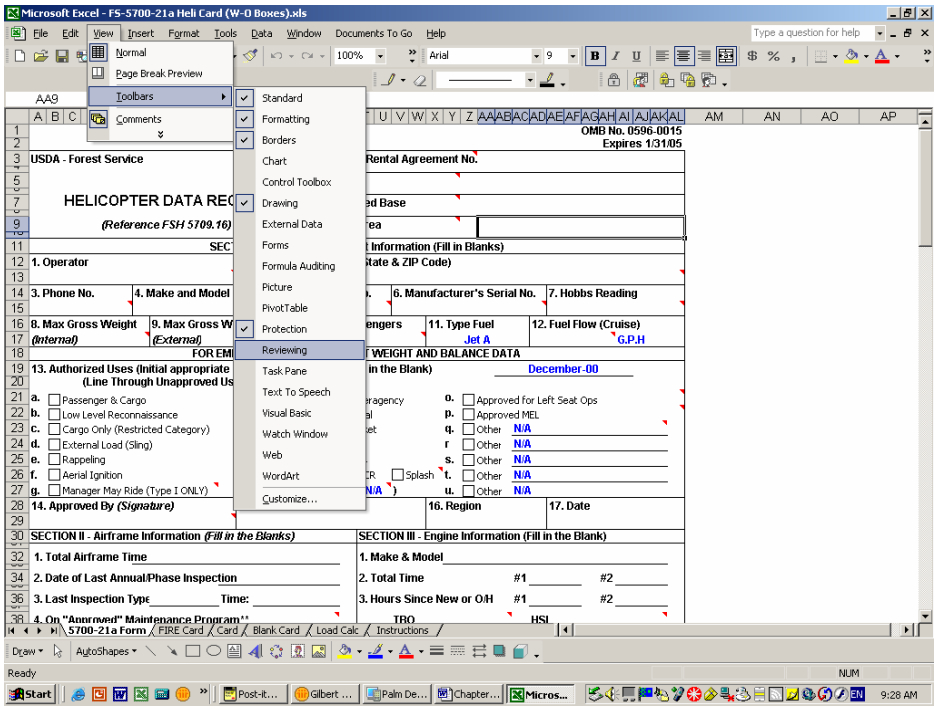
The explanation on how to "Unprotect and Protect" the document is provided below and by selecting the Instruction Tab at the bottom of the page.

The following gives an explanation on how to edit a Comment Field, in the event an Inspector wants to add or edit the information for his/her own benefit.

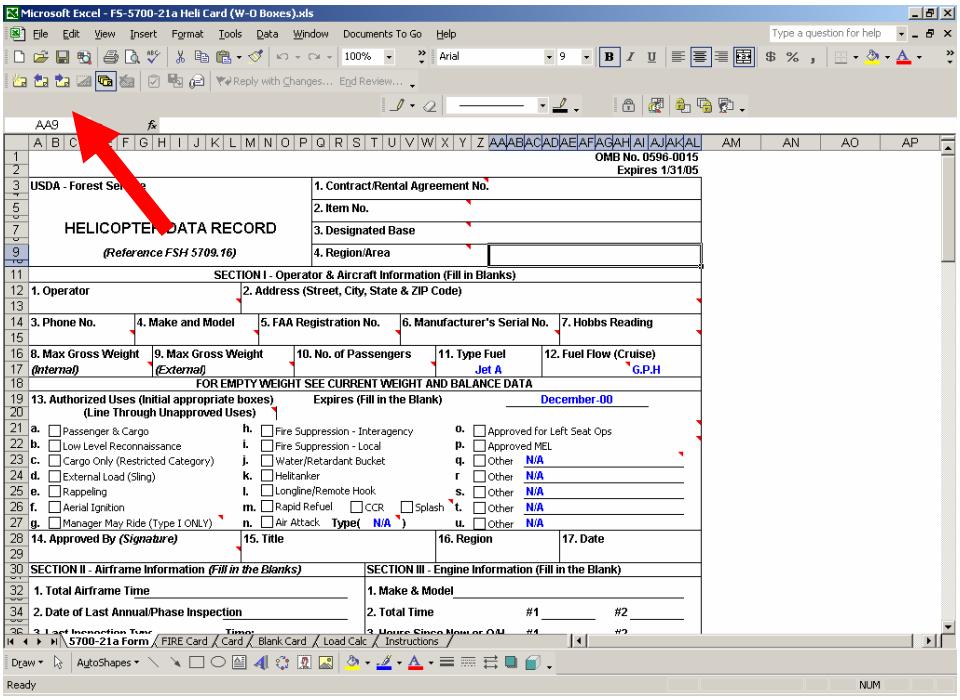
1. Click on **"Tools"** on the Menu Bar.
2. Select **"Protection"** (If it is not shown, click on the double down arrow at the bottom of the **"Tools"** menu, and all the Menu options will appear). Then select **"Unprotect Sheet."**



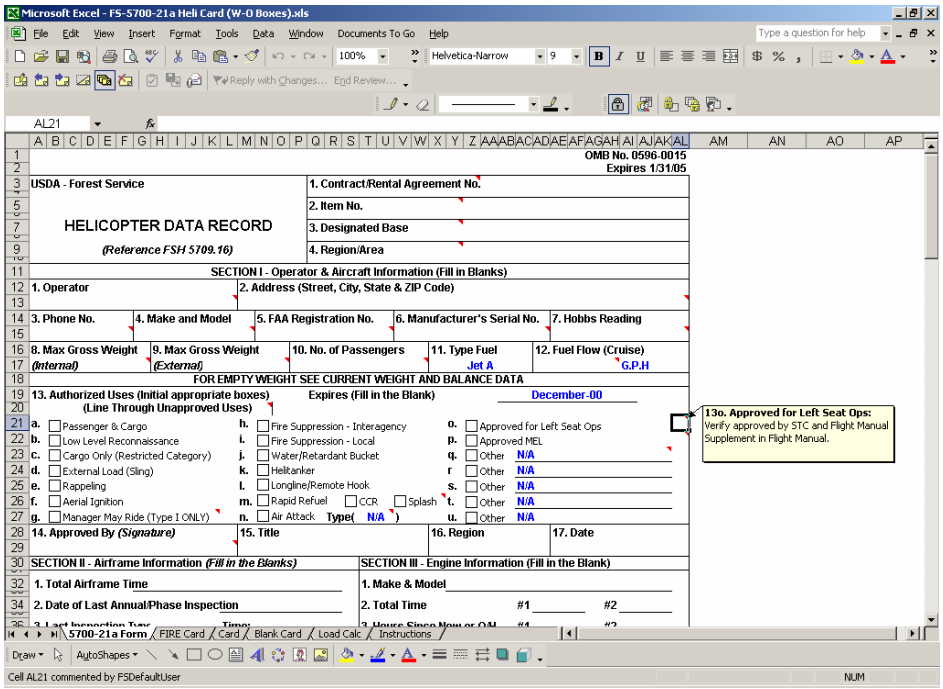
3. Click "**View**" on the Menu Bar. (Click on the double down arrow if necessary.)
4. Select **"Toolbars"**, then **"Reviewing."**



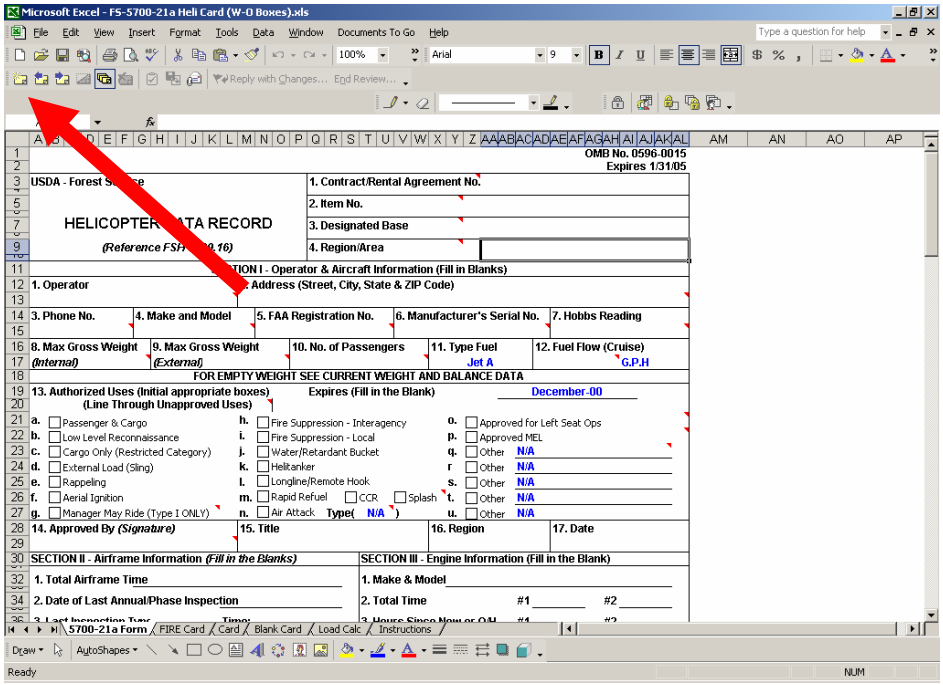
5. In the left hand upper corner new symbols will appear.



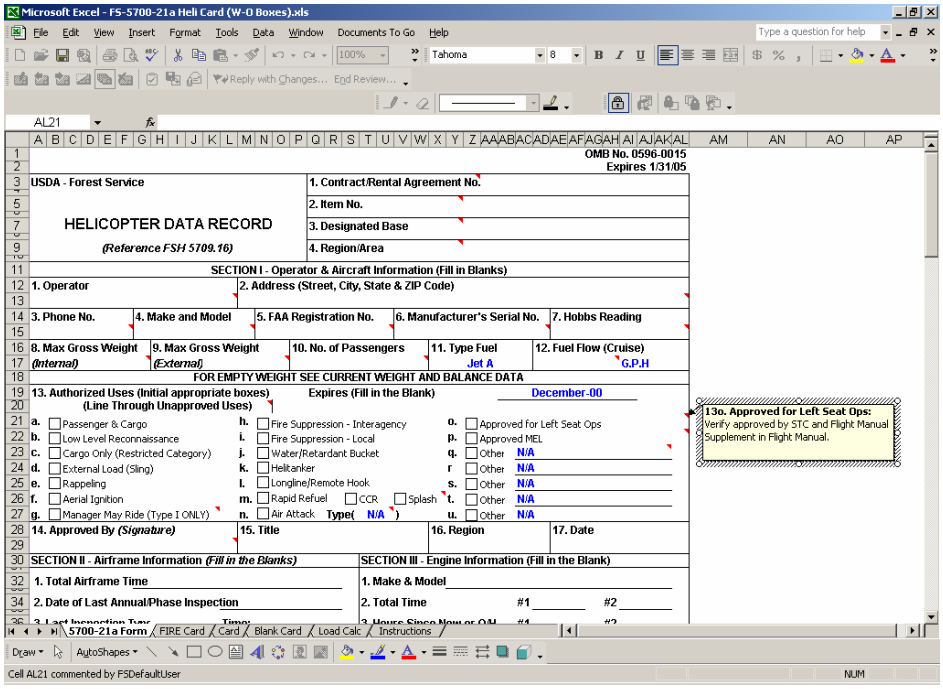
6. Place cursor over **Red** triangle for the Comment Field to be edited and when the Comment Field appears, click the **"Left Mouse Button."**



7. Click on the far left symbol that appeared earlier. (Looks like a Post-It Note, with a pencil.) **Don't be concerned that the Comment Field disappears when the cursor is moved.** It will reappear when the Post-It Note symbol is selected.

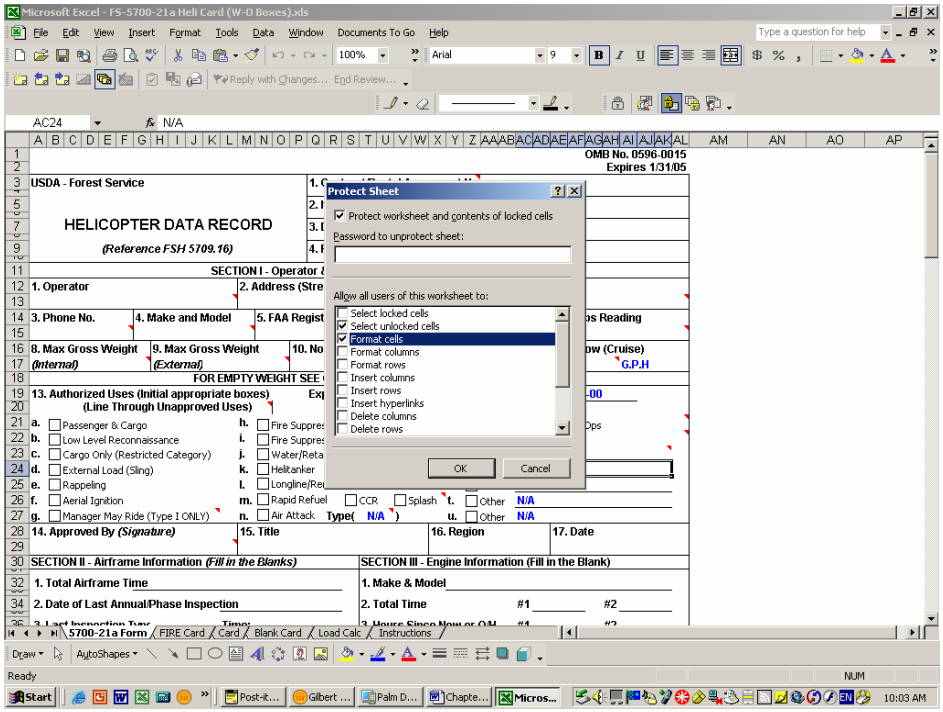


8. Place the cursor inside the Comment Field and make your edits. Once editing is complete place the cursor outside the Comment Field and click the **"Left Mouse Button."** The Comment Field will disappear again, but the edited comments are saved.



NOTE: New Comment Fields may be added by the same method. Place the cursor where the Comment Field is to be added and then follow the directions from Item 6 above.

Don't forget to re-protect the form once done editing, by following steps 1 and 2 above, except select **"Protect Sheet."** When the Dialog Box appears select **"OK."**



NOTES

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

PILOT	DATE	TACH TIME			OIL ADDED		LANDINGS		ENGINE CYCLES		TOTALS	LANDINGS	CYCLES	
		END	START	TOTAL	1	2	1	2	1	2			(1	2)
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
PREVIOUS TOTAL			
HOURS THIS PAGE			
TOTAL HOURS TO DATE			

VOR CHECK (91.25) DATE _____
LOCATION _____ BEARING NO. 1_____ NO.2 _____
ERROR_____TYPE TEST _____
DATE DUE _____
SINATURE _____

ANNUAL DUE	SPECIAL INSP.

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

Figure 10-1 – FS-5700E Aircraft Maintenance Log

AIRCRAFT APPROVAL *(Reference FSM 5710)*		Expiration Date
Make/Model		**Operator Name and Address**
FAA No.	**Serial No.**	
Empty Wt.	**Gorss 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

Figure 10-2 – FS-5700-4 Aircraft Approval Card (Airtanker)
(USED FOR AIR TANKERS ONLY)

OMB No. 0596-0015
Expires 6/30/08

USDA - Forest Service	1. Contract/Rental Agreement No.
AIRPLANE DATA RECORD *(Reference FSH 5709.16)*	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. ☐ Fire Surveillance/Reconnaissance
d. ☐ Air Attack (Type _____)
e. ☐ Equipped w/Autopilot (Single Pilot IFR)
f. ☐ Approved MEL
g. ☐ Other _____
h. ☐ Other _____
i. ☐ Other _____
j. ☐ Other _____

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

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

1. Total Airframe Time _____
2. Date of Last Annual/Complete Phase Cycle Insp _____
3. Total Time Last 100 Hr/Phase Insp. _____ Date: _____
4. On "Approved" Maintenance Program _____
5. Airworthiness & Registration _____
6. Date of Last Actual Weighing _____
   Empty Weight _____
7. Flight Manual Rev No. _____ Date: _____
8. Maintenance Records _____
9. Flight Instruments *(Condition)* _____
10. Engine Instruments *(Condition)* _____

SECTION III - Engine Information (Fill in the Blank)

1. Make and Model _____
2. Hours Since New or O/H #1 _____ #2 _____
   TBO _____ HSI _____
3. Hours Since HSI #1 _____ #2 _____
4. Prop Hours Since New or O/I #1 _____ #2 _____
   TBO _____ Gov TBO _____
5. Maintenance Records #1 _____ #2 _____

SECTION IV - Operating Certificates *(Fill in the Blank*

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

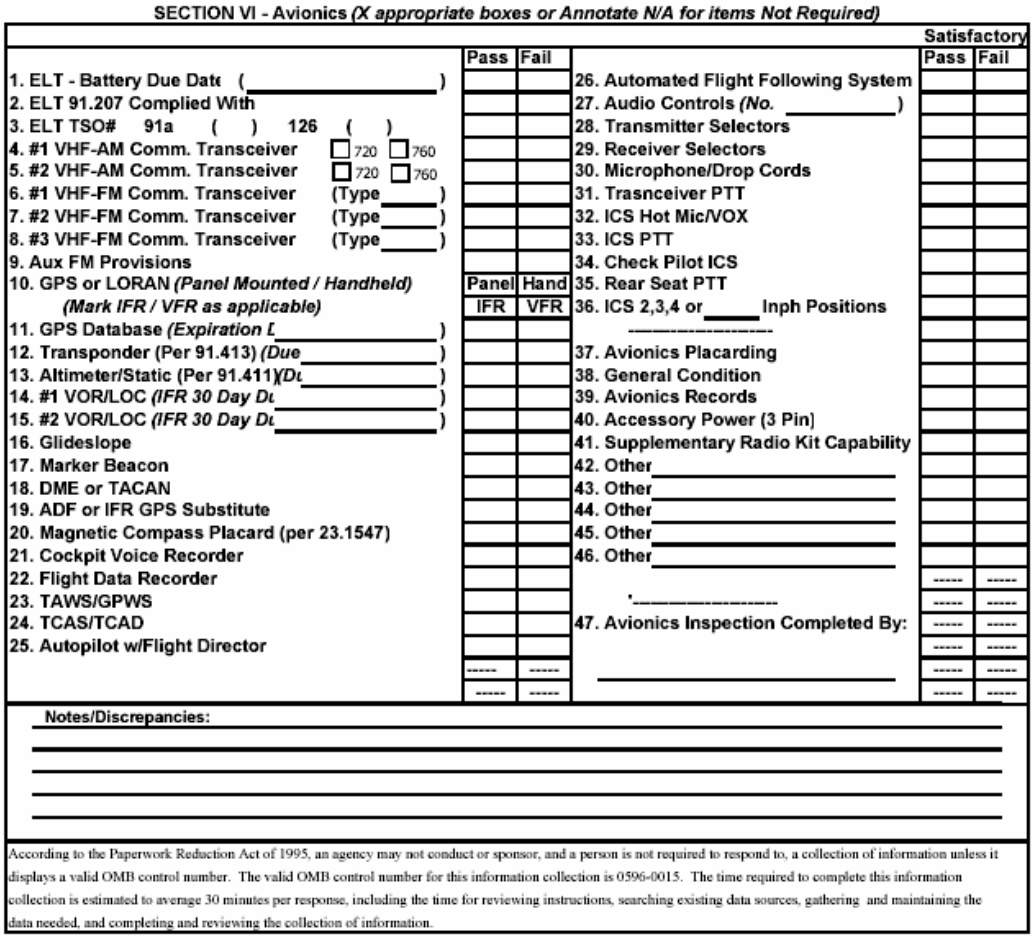
SECTION V - Equipment *(X appropriate boxes)*

	Satisfactory Yes	Satisfactory No
1. Hobbs Installation		
2. Free Air Temperature Gauge		
3. Seat Belt *(All)*		
4. Shoulder Harness *(Front)*		
5. First Aid Kit		
6. Survival Kit		
7. Fire Extinguisher		
8. Light - Navigation/Landing		
9. Strobes and/or Beacon *(Anti-Collision)*		
10. De-ice/Anti-ice Equipment		
11. Cabin Heater		

	Satisfactory Yes	Satisfactory No
12. Skis/Wheels		
13. Float: *(Size: _____)*		
14. Navigation Charts/Approach Plates		
15. Shooting Door/Window		
16. Shoulder Harness w/Inertia Reel *(Rear)*		
17. High Visibility Markings		
18. HAZMAT Handbook*(w/Current Exemption Lett*		
19. Procurement Document in Aircraft		
20. Additional Items _____		
21. Security Devices		
1 _____		
2 _____		
3 Incorporated into Preflight checklist		

FS-5700-21 (6/08)

Figure 10-3 – FS-5700-21 (Front Page)



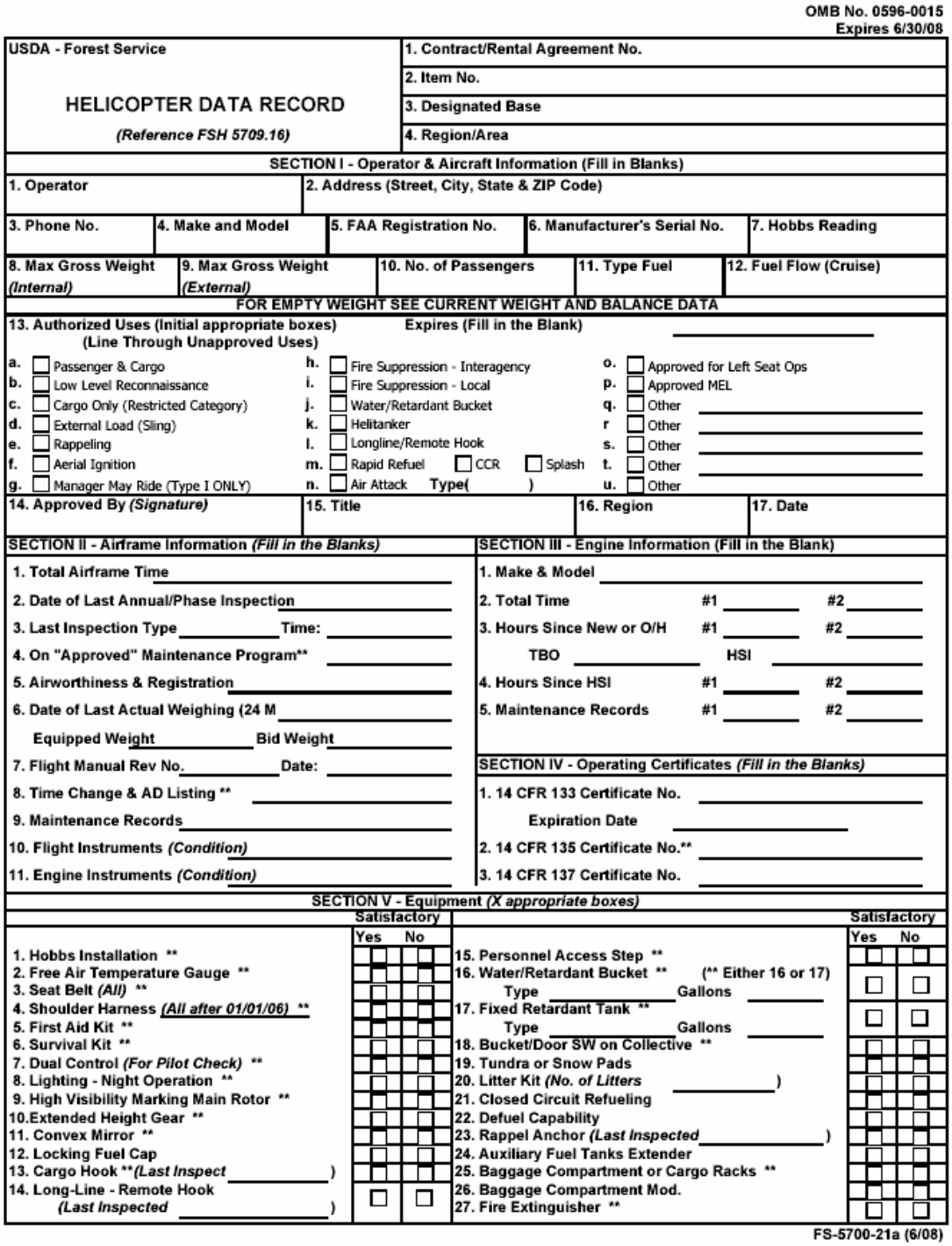
SECTION VI - Avionics *(X appropriate boxes or Annotate N/A for items Not Required)*

	Pass	Fail		Satisfactory Pass	Satisfactory Fail
1. ELT - Battery Due Date ( )			26. Automated Flight Following System		
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 D*)					
12. Transponder (Per 91.413) *(Due*)			37. Avionics Placarding		
13. Altimeter/Static (Per 91.411)*(Du*)			38. General Condition		
14. #1 VOR/LOC *(IFR 30 Day Du*)			39. Avionics Records		
15. #2 VOR/LOC *(IFR 30 Day Du*)			40. Accessory Power (3 Pin)		
16. Glideslope			41. Supplementary Radio Kit Capability		
17. Marker Beacon			42. Other		
18. DME or TACAN			43. Other		
19. ADF or IFR GPS Substitute			44. Other		
20. Magnetic Compass Placard (per 23.1547)			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				-----	-----
	-----	-----		-----	-----
	-----	-----		-----	-----

Notes/Discrepancies:

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0015. The time required to complete this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Figure 10-3 (Cont.) – FS-5700-21 (Back Page)



OMB No. 0596-0015
Expires 6/30/08

USDA - Forest Service

HELICOPTER 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. Hobbs Reading
8. Max Gross Weight *(Internal)*	9. Max Gross Weight *(External)*	10. No. of Passengers	11. Type Fuel	12. Fuel Flow (Cruise)

FOR EMPTY WEIGHT SEE CURRENT WEIGHT AND BALANCE DATA

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

a. ☐ Passenger & Cargo	h. ☐ Fire Suppression - Interagency	o. ☐ Approved for Left Seat Ops
b. ☐ Low Level Reconnaissance	i. ☐ Fire Suppression - Local	p. ☐ Approved MEL
c. ☐ Cargo Only (Restricted Category)	j. ☐ Water/Retardant Bucket	q. ☐ Other _____
d. ☐ External Load (Sling)	k. ☐ Helitanker	r ☐ Other _____
e. ☐ Rappeling	l. ☐ Longline/Remote Hook	s. ☐ Other _____
f. ☐ Aerial Ignition	m. ☐ Rapid Refuel ☐ CCR ☐ Splash	t. ☐ Other _____
g. ☐ Manager May Ride (Type I ONLY)	n. ☐ Air Attack Type( )	u. ☐ Other _____

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

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

1. Total Airframe Time _____
2. Date of Last Annual/Phase Inspection _____
3. Last Inspection Type _____ Time: _____
4. On "Approved" Maintenance Program** _____
5. Airworthiness & Registration _____
6. Date of Last Actual Weighing (24 M _____
   Equipped Weight _____ Bid Weight _____
7. Flight Manual Rev No. _____ Date: _____
8. Time Change & AD Listing ** _____
9. Maintenance Records _____
10. Flight Instruments *(Condition)* _____
11. Engine Instruments *(Condition)* _____

SECTION III - Engine Information (Fill in the Blank)

1. Make & Model _____
2. Total Time #1 _____ #2 _____
3. Hours Since New or O/H #1 _____ #2 _____
   TBO _____ HSI _____
4. Hours Since HSI #1 _____ #2 _____
5. Maintenance Records #1 _____ #2 _____

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

1. 14 CFR 133 Certificate No. _____
   Expiration Date _____
2. 14 CFR 135 Certificate No.** _____
3. 14 CFR 137 Certificate No. _____

SECTION V - Equipment *(X appropriate boxes)*

	Satisfactory Yes	Satisfactory No		Satisfactory Yes	Satisfactory No
1. Hobbs Installation **	☐	☐	15. Personnel Access Step **	☐	☐
2. Free Air Temperature Gauge **	☐	☐	16. Water/Retardant Bucket ** (** Either 16 or 17)	☐	☐
3. Seat Belt *(All)* **	☐	☐	Type _____ Gallons _____		
4. Shoulder Harness *(All after 01/01/06)* **	☐	☐	17. Fixed Retardant Tank **	☐	☐
5. First Aid Kit **	☐	☐	Type _____ Gallons _____		
6. Survival Kit **	☐	☐	18. Bucket/Door SW on Collective **	☐	☐
7. Dual Control *(For Pilot Check)* **	☐	☐	19. Tundra or Snow Pads	☐	☐
8. Lighting - Night Operation **	☐	☐	20. Litter Kit *(No. of Litters* _____)	☐	☐
9. High Visibility Marking Main Rotor **	☐	☐	21. Closed Circuit Refueling	☐	☐
10. Extended Height Gear **	☐	☐	22. Defuel Capability	☐	☐
11. Convex Mirror **	☐	☐	23. Rappel Anchor *(Last Inspected* _____)	☐	☐
12. Locking Fuel Cap	☐	☐	24. Auxiliary Fuel Tanks Extender	☐	☐
13. Cargo Hook **(Last Inspect _____)	☐	☐	25. Baggage Compartment or Cargo Racks **	☐	☐
14. Long-Line - Remote Hook *(Last Inspected* _____)	☐	☐	26. Baggage Compartment Mod.	☐	☐
			27. Fire Extinguisher **	☐	☐

FS-5700-21a (6/08)

Figure 10-4 – FS-5700-21a (Front Page)

	Satisfactory Yes	Satisfactory No		Satisfactory Yes	Satisfactory No
28. Particle Separator	☐	☐	36. HAZMAT Book *(w/CurrentExemption Letter)*	☐	☐
29. Engine Reignition Kit	☐	☐	37. Procurement Document in aircraft	☐	☐
30. Battery, Auxiliary or H.D.	☐	☐	38. Security Devices	☐	☐
31. Heater, Type	☐	☐	1. _____	☐	☐
32. Main Rotor Brake	☐	☐	2. _____	☐	☐
33. Wire Cutter Kit	☐	☐	3. Incorporated into preflight checklist	☐	☐
34. White Strobe **	☐	☐	39. Other _____	☐	☐
35. Operations Manual in aircraft	☐	☐	40. Other _____	☐	☐
** *Required for Interagency Fire*	☐	☐	41. Other _____	☐	☐

SECTION VI - Service Truck *(X appropriate boxes)*

	Satisfactory Yes	Satisfactory No		Satisfactory Yes	Satisfactory No
1. Capacity** _____ U.S. Gallons			13. Fuel Hoses *(Approved Type)***	☐	☐
2. Type Truck _____			14. Mechanized Reel	☐	☐
3. License No. _____			15. Ground & Bonding Cables **	☐	☐
4. Condition	☐	☐	16. Fuel Filtering System **	☐	☐
5. Fire Extinguishers (2 each 20-B,C) **	☐	☐	17. Date Filter Changed ** _____	☐	☐
6. Placarded - 49 CFR 172 **	☐	☐	18. Spare Filters **	☐	☐
7. Marked w/Type Fuel - 3 Inch Letters **	☐	☐	19. Gas Engine Protection	☐	☐
8. No Smoking Signs - 3 Inch Letters **	☐	☐	20. FM Radio	☐	☐
9. Sump & Drain **	☐	☐	21. Spill Kit ** (_____)Gallons Minimum	☐	☐
10. Fuel Meters **	☐	☐	22. Filter Manufacturer's Manual	☐	☐
11. Differential Pressure Gauge(s)	☐	☐	23. Record for recording sump draining **	☐	☐
12. Nozzle Screen/Dust Cap **	☐	☐	24. Other _____	☐	☐

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

	Pass	Fail		Pass	Fail
1. ELT - Battery Due Date (_____)	☐	☐	19. Audio Controls ** *(No.* _____)	☐	☐
2. ELT 91.207 Complied With	☐	☐	20. Transmitter Selectors	☐	☐
3. ELT TSO# ** 91a ( ) 126 ( )	☐	☐	21. Receiver Selectors	☐	☐
4. #1 VHF-AM Comm. Transceiver ** ☐720 ☐760	☐	☐	22. Microphone/Drop Cords (U-92A/U**)	☐	☐
5. #2 VHF-AM Comm. Transceiver ☐720 ☐760	☐	☐	23. Transceiver PTT	☐	☐
6. #1 VHF-FM Comm. Transceiver (Type _____)	☐	☐	24. Rappel Audio Control & Drop Cord	☐	☐
7. #2 VHF-FM Comm. Transceiver (Type _____)	☐	☐	25. ICS Hot Mic/VOX (Pilot/Copilot **)	☐	☐
8. Aux FM Provisions **	☐	☐	26. ICS PTT **	☐	☐
9. GPS *(Panel Mounted ** / Handheld)*	Panel	Hand	27. Rear Seat PTT (2 Aft Cabin Exits **)	☐	☐
(Mark IFR / VFR as applicable)	IFR	VFR	----------		
10. GPS Database *(Expiration D* _____)	☐	☐	28. Avionics Placarding	☐	☐
11. Transponder **(Per 91.413) *(Due D.* _____)	☐	☐	29. General Condition	☐	☐
12. Altimeter/Static** (Per 91.411)*(Due* _____)	☐	☐	30. Avionics Records, Diagrams & Schematics	☐	☐
13. Magnetic Compass Placard (per 27.1547)	☐	☐	31. Accessory Power (3 Pin) **	☐	☐
14. TCAS/TCAD	☐	☐	32. Cargo Hook Connector (9 pin) **	☐	☐
15. Automated Flight Following System	☐	☐	33. Other _____	☐	☐
16. Verify AFF Operational	☐	☐	34. Other _____	☐	☐
17. Other _____	☐	☐	35. Other _____	☐	☐
18. Other _____	☐	☐	36. Other _____	☐	☐
			37. Avionics Inspection Completed By: _____	☐	☐
** *Required for Interagency Fire*					

Notes/Discrepancies: _____

FS-5700-21a (6/08)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0015. The time required to complete this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Figure 10-4 (Cont.) – FS-5700-21a (Back Page)

UNITED 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 to the FS National Aviation Maintenance 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 DOCUMTENTATION)	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:_____ Date:_____

CONTRACTING

4/97

Figure 10-5 – FS 5700-32 Aircraft Contract Status Report

AIRCRAFT PRE-USE INSPECTION DISCREPANCY REPORT

OPERATOR_____ AIRCRAFT TYPE_____
BASE_____ AIRCRAFT NUMBER_____
CONTRACT NUMBER_____

Contract Page #_____ Item No._____	Discrepancy
Corrective Action By _____	
Contract Page #_____ Item No._____	Discrepancy
Corrective Action By _____	
Contract Page #_____ Item No._____	Discrepancy
Corrective Action By _____	
Contract Page #_____ Item No._____	Discrepancy
Corrective Action By _____	

Discrepancies written by:_____ _____
Date

Corrective action inspected by:_____ _____
Authorized Contractor Maintenance Supervisor Date
A&P / IA / REPAIR STATION NUMBER_____

White Copy: Contracting – NIFC Yellow Copy: Contractor Pink Copy: Contractor
(Send to Inspector when Discrepancies Corrected)

Revised 1/1997

Figure 10-6 – FS 5700-33 Aircraft Pre-Use Inspection Discrepancy Report

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**

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

* U.S. GPO: 1997-690-103

Figure 10-7 – Point-To-Point Card

INTERAGENCY DATA CARD
SERVICE TRUCK

CONTRACTOR _____

ADDRESS _____

_____

TRUCK TYPE _____

LICENSE NO. _____

CAPACITY GAL. _____ FUEL TYPE _____

CARD EXPIRATION DATE _____

CONTRACT/RENTAL NO. _____

APPROVED BY _____

DATE _____

Figure 10-8 – Service Truck – Interagency Data Card

U.S. Department of Agriculture –
AIRCRAFT MECHANIC (HELICOPTER) Forest Service

Contract No._____

Name _____ Date of Birth _____

Employer _____ Office Phone_____

Address _____

FAA Certificates: Type _____ No. _____ Date _____

Total Years Experience (As Licensed Mechanic) _____

Record of Special Training (Factory Schools, etc.)

Name of Course	Location	Years Attended

Record of Past Performance (Previous Three Years)

Dates	Location	Employer	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 operation with minimal supervision.

I certify that the information listed by me on this form is a true and correct summary of my aircraft maintenance experience. I have read the Maintenance Section of this contract and understand the terms and conditions.

_____ _____
Date Mechanic Signature

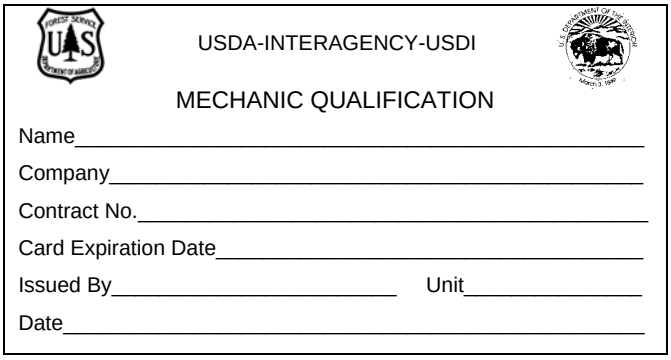
(Inspectors Use Only)

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

Type and Model Helicopter(s)	Type and Model Engine(s)

_____ _____
Date USF Maintenance Inspector

Figure 10-9 – Mechanic Qualification Form


USDA-INTERAGENCY-USDI

MECHANIC QUALIFICATION

Name_____

Company_____

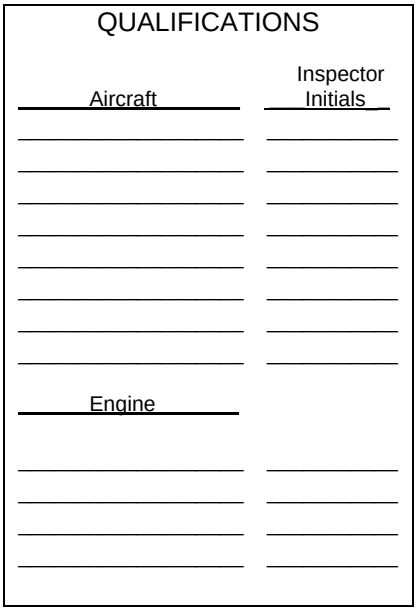
Contract No._____

Card Expiration Date_____

Issued By_____ Unit_____

Date_____

Figure 10-10 – Mechanic Qualification Card (Front Side)


QUALIFICATIONS

Aircraft	Inspector Initials

Engine

Figure 10-10 (Cont.) – Mechanic Qualification Card (Back Side)

INTERAGENCY HELICOPTER LOAD CALCULATION OAS-67/FS 5700-17 (11/03)		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 WT (_____ gallons X _____ lbs per gal)			
6 OPERATING WEIGHT (3 + 4 + 5)			

	Non-Jettisonable		Jettisonable
	HIGE	HOGE	HOGE-J
7a PERFORMANCE REF (List page/chart from FM)			
7b COMP GROSS WT (FM Performance Section)			
8 WT REDUCTION (Req for all Non-Jettisonable)			
9 ADJUSTED WEIGHT (7b minus 8)			
10 GROSS WT LIMIT (FM Limitations Section)			
11 SELECTED WEIGHT (Lowest of 9 or 10)			
12 OPERATING WEIGHT (From Line 6)			
13 ALLOWABLE PAYLOAD (11 MINUS 12)			

14 PASSENGERS/CARGO MANIIFEST	
15 ACTUAL PAYLOAD (Total of all weights listed in Item 14) Line 15 must not exceed Line 13 for the intended mission.	
PILOT SIGNATURE	HazMat
MGR SIGNATURE	Yes____ No____

Figure 10-11 – OAS-67/FS 5700-17 Interagency Helicopter Load Calculation

Chapter 11 – Contract/Cooperator Aircraft Inspection Procedures

I. Introduction. Before an aircraft can be used by the Forest Service it must be "carded" by an approved aircraft inspector, per FSH 5709.16 (11.25). Inspectors are nominated by their Regional Aviation Officer, and once approved their names are entered into the inspector list maintained by the Washington Office, Fire and Aviation Management Office at the National Interagency Fire Center in Boise, based on the category, type and/or mission of the aircraft for which they are approved.

Inspectors are free to inspect aircraft in any manner they feel comfortable with. What works for one inspector may not work for another. The following pages give broad guidelines on what should be checked when "carding" an aircraft. They present a logical format for conducting inspections. Inspectors should tailor their inspections to meet their needs.

Aircraft "cards" are the records used to document aircraft pre-use inspections. The three forms used are FS-5700-21, Airplane Data Record; FS-5700-21a, Helicopter Data Record; and FS-5700-4, Aircraft Approval Card, Airtanker. There is one additional "card" used to approve aircraft for use, and that is the Point-to-Point Card, which does not have a form number. Point-to-Point cards are addressed at the end of this chapter. Instructions for filling out the -21 and -21a forms are provided in Appendix 4, and in the Excel version in comment fields.

The airtankers are on a national contract, so these aircraft are normally carded by teams selected by the WO. It is unlikely inspectors will go out on their first airtanker inspection by themselves. Instead, they go with at least one other qualified individual who can show them the ropes and how this card is filled out, so the airtanker form will not be covered in this chapter.

The aircraft "card" and contract itself can and should be used as a guide or checklist to ensure that all required items are checked. One thing to remember regarding the Pre-Use Inspection, the responsibility for airworthiness of aircraft lies with the ***Operator and the Federal Aviation Administration***. Forest Service Aircraft Inspectors are responsible to ensure aircraft meet contract specifications.

One final item regarding Cooperator Aircraft (i.e. non-Federally owned and operated aircraft). While these aircraft may be classified as "Public Aircraft" and therefore may not be required by law to be maintained in accordance with the Federal Aviation Regulations, per FSM 5713.43 they must meet the same requirements as contracted aircraft with regard to condition of the aircraft and equipment installed. It is Forest Service policy not to approve these aircraft unless they are maintained to the same standards as contract aircraft.

II. Aircraft, Avionics and Equipment Inspection Policy. Requirements and standards for inspections are set forth in the applicable procurement document and USFS

policy. Inspections will be conducted objectively and in accordance with the applicable requirements and standards. Request for inspections may come from a Forest Dispatch, Ranger District, Regional Office, National Office or other governmental agencies. USFS inspectors will not inspect aircraft, or equipment unless there is a procurement document that can be referenced and an official request has been made. Inspection requirements are unique to each procurement document, contract or purchase/rental agreement. The inspector must familiarize themselves with each contract. The most effective and efficient way to perform a contract conformity inspection is to use a copy of the contract. Use it and the form as a checklist while inspecting the aircraft, or equipment by reading each line item.

Note: An inspector will 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.

Many aircraft have multiple contracts associated with the same aircraft. A particular helicopter may have contracts with several different forests or regions and each contract awarded for the same aircraft may require something a little different. Do everyone a favor and inspect the helicopter against all awarded contracts – page by page, as the first inspection may be the only one that particular aircraft will receive. After the inspection send the inspection results to the appropriate AMI's.

If a situation arises in which an inspector determines that the best interest of the USFS would be served by changing the requirements, they must contact the appropriate Contracting Officer. The Contracting Officer is the person responsible for making changes to the contract and issuing modifications. It is the inspector's responsibility to notify the contracting officer and let them determine an appropriate course of action. **Any** deviation from the original procurement document will be accompanied by a contract modification issued by the Contracting Officer responsible for that specific procurement document.

Only USFS approved personnel may act as inspectors in the preparation of the Forest Service inspection forms. Should an inspector note a deficiency, which is outside their area of responsibility (i.e. avionics for an aircraft inspector, or vice-versa), they will notify an inspector within whose area of responsibility the deficiency falls. If an appropriate inspector cannot be contacted, the inspector who discovered the deficiency will document it and forward it to the National Office.

III. Aircraft, Avionics and Equipment Inspection Procedures. Inspections will be accomplished to ascertain that procured aircraft and equipment are in compliance with the appropriate procurement document specifications, and that they appear to be in a condition for safe flight. Any test equipment used shall be maintained and calibrated in accordance with the aviation industry standards. Special Mission activity aircraft must have a valid Aircraft Data Card, annotated for the special use to be performed.

The vendor will be requested to provide access to any area the inspector feels requires a more detailed inspection. Inspectors should request assistance from the operator to have panels opened for them, and to apply aircraft power if needed.

Note: Inspectors must try to 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.

Inspectors must ensure that all items that are an Interagency Fire Requirement, are available for all aircraft that are approved for "fire." The interagency agreement can be found in Appendix 10, and on the FS-5700-21a are identified with double asterisks (**) following the item.

When inspecting Water Buckets, 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. Appendix 1 contains information on the various models, capacities, nomenclatures and inspection criteria for Bambi Buckets.

Rappel Anchors must be inspected in accordance with the manufacture's Instructions for Continued Airworthiness. A list of approved anchors can be found in Appendix 1.

If Security Devices are required by contract they must be two independent devices, either electrical and/or mechanical. Locked windows or doors are not acceptable, and removal of security devices must be incorporated into the preflight checklist.

Aircraft maintenance records shall be reviewed for completeness and to a depth, as determined by the inspector, to ensure compliance with the procurement document and Federal Aviation Regulations. Inspectors, at their discretion, may request a ground run-up or operational check of any system to ensure conformity, function, or performance. If aircraft and equipment meet prescribed specifications, the inspector will complete the appropriate Aircraft Data Card or Helicopter Data Card and give a copy to the vendor/operator to be placed in the aircraft.

If, in the inspector's opinion the vendor/operator has failed to make a reasonable attempt to prepare his 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 (Figure 10-5 and 11-6) shall be annotated "Inspection Terminated." Complete the Re-inspection Schedule section of the contract status report, obtain the vendors signature, and provide them with a copy. If the vendor fails to maintain a helpful and courteous atmosphere, the inspector will depart and inform their supervisor. You must remain courteous and non-combative.

IV. Aircraft Pre-Use Inspections. The following paragraphs bring out the main points of a pre-use inspection.

A. Contract Specifications. The first thing that should be done is to check the contract itself to determine if the aircraft being inspected is the correct aircraft per the contract and what the specifications are. Special requirements listed in Section B, Schedule of Items of the contract, should be checked to determine that the aircraft is the one in fact offered. Unique equipment requirements will also be found in Section B. Section C, Description/Specification of Work should also be checked.

This is the point where it should be determined if the aircraft meets the performance spec and verified that the aircraft weight is within 1% of the bid weight. A sample of a completed Helicopter Load Calc can be found in Figure 11-8. An explanation of how to fill it out based on a performance spec is also given. To ensure the correct charts are used Inspectors may want to have the operator's pilot complete the Load Calc for them.

Once it is determined how the aircraft should be configured and maintained, the inspection of the aircraft itself can begin.

B. Contractor's Operating Authority. Inspectors should verify the vendors FAA operating authority, i.e. FAR Part 133, 135, 137. If the aircraft offered for use is not listed in the vendors Operations Specifications (Ops Spec), there is no need to proceed with the inspection. For Maintenance Inspectors one of the first items to check is to ensure the aircraft offered is listed on page D085 - Aircraft Listing, of the Ops Specs. Per FAR 135.21(f) Operators are required to "carry appropriate parts of the manual on each aircraft when away from the principal base." Also, per FAR 119.9 the Part 135 Certificate Number or Operator name must be clearly visible from outside the aircraft while sitting on the ground.

C. Aircraft Inspection. A look at the aircraft is the next logical step. This is where the knowledge and expertise of the inspector comes into play. Some inspectors are more familiar with certain aircraft and therefore may only do a cursory check, with emphasis on areas they know from experience are susceptible to problems. On the other hand, if an inspector is not familiar with the aircraft under inspection, they may elect to perform a thorough inspection of the complete aircraft. Each inspector's background is varied, therefore inspections vary. Keep in mind inspectors are not responsible for the airworthiness of the aircraft. That is the responsibility of the operator and FAA. Inspectors are not expected to perform an annual inspection. Their job is to determine the general overall condition of the aircraft, and determine if the aircraft can fulfill the requirements of the contract. Inspectors should keep in the back of their minds that fellow Forest Service employees, many of whom are not familiar with aircraft, are relying on them to ensure they arrive at their destination safely.

Restrictions and Limitations

- Do Not inspect a vendor's aircraft without the vendor's knowledge and permission. **This does not restrict spot inspections of aircraft while being used under USFS procurement agreements.** If a discrepancy is noted with an aircraft, it should be brought to the operator's attention.

- Do Not apply power to vendor's aircraft. The same applies for opening inspection panels and doors. Always request assistance from the operator. No matter how familiar an inspector is with an aircraft, the agency becomes responsible if something goes wrong. Also, if an operator later discovers a problem after an inspector has applied power themselves, they could hold the agency at fault.

- Never perform maintenance or preventive maintenance to non-Forest Service owned aircraft or equipment during the course of pre-use inspections.

- The specifications stated in the procurement document should be used as the inspection standard for contract aircraft. The best checklist that can be used is the contract and the aircraft data card.

NOTE: Inspectors may request a ground run-up or operational check of any system to ensure conformity, function, or performance.

D. Review of Records. The next to last step is to check the aircraft records. This should consist of a general check of the records. There are several items found in the records that need documenting on the aircraft data card. These include but are not limited to, Airworthiness Directive compliance, current inspections status, Weight and Balance data and TBO requirements. Also, while inspecting the aircraft serial numbers of some of the components (i.e. rotor blades) can be noted and a spot check made against the records.

E. Documentation. The last thing an inspector will normally accomplish is the completion of the Data Record (FS-5700-4, FS-5700-21 or FS-5700-21a) and the FS-5700-32, Aircraft Contract Status Report. These are used to record the results on the inspection of the aircraft. After the aircraft has been inspected and meets all the requirements of the contract, the card is issued to the contractor. A sample of a completed FS-5700-21 and -21a Data Card is provided at the end of this chapter (Figures 11-3 and 11-4). Appendix 4 provides an explanation of how to complete the forms, and on the Excel version drop down comment fields are available with explanations.

The maximum approval duration on the Aircraft Data Card is one year or until the expiration date of the procurement agreement. 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.

Cards are normally issued for a maximum 12 calendar months from the date of issue, and usually expire the last day of the 12th month, or the expiration date of the contract, whichever is earlier. However, inspector's have the latitude to card for a shorter period of time. There may be a case where an aircraft is carded "out of cycle." In other words, a certain operator is normally inspected in April and the aircraft in question is not inspected until June. To get it back in cycle the inspector may want to issue the card with an April expiration.

Note: The exception to this is airtankers. The Airtanker Program Manager requests that all cards be issued with an expiration date of December 31st.

There may also come a time when an aircraft's data card is about to expire and there isn't time available to re-card it prior to that date. If this occurs inspectors have the latitude to extend the card for a short period of time to enable the aircraft to keep operating. However, this should only be done when there are no other options available, and as a general rule extensions should be limited to no more than one month.

A completed copy of the inspection form should be made for filing with the contract file. The upper part of the Data Record should then be removed and given to the operator to be kept in the aircraft. For National Type I & II helicopters the copy of the whole form should be forwarded to Boise. Inspectors are encouraged to keep a copy for their records.

The Aircraft Contract Status Report Form (FS-5700-32) will be completed for each inspection initiated whether the inspection is completed or terminated (Figure 11-6). Multiple aircraft may be listed on the form. If there are deficiencies noted with a particular aircraft, which may delay the use of the aircraft or equipment, a separate Aircraft Contract Status Report Form needs to be prepared. This form, listing the aircraft or equipment, with discrepancies will be maintained by the inspector until the deficiencies are corrected or until the contract period is over. The date and location of the scheduled re-inspection are to be written in the "Re-inspection Schedule" block of the Aircraft Contract Status Report with the contractor or representative acknowledging receipt by signing the 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. If required by the procurement document, approved mechanics will also be listed.

The Aircraft Contract Status Report (FS-5700-32) has four copies. Who gets a copy of the various pages is printed in red at the bottom of each page.

If there are discrepancies noted with the aircraft they will need to be annotated on the FS-5700-33, Aircraft Pre-use Inspection Discrepancy Report (Figure 11-7). It is up to the inspector's judgment on whether or not to issue the card in this scenario. Normally, a card is not issued until all discrepancies are cleared. However, there may be a case where a minor discrepancy is noted that the inspector wants addressed, but doesn't feel it is serious enough to write it up as a discrepancy on the pre-use report, or to hold up the card

over. Use good judgment when deciding what to do. Distribution of the three copies of the Pre-Use Inspection Discrepancy Report is listed at the bottom of the form. The aircraft will not be approved until an authorized maintenance technician has signed off the discrepancies on the Aircraft Pre-use Inspection Discrepancy Report form.

Inspection Reporting: National CWN Helicopters are to be inspected, discrepancies documented, approval cards issued, and status reported to the FS Aviation Unit at NIFC before they are eligible for dispatch. Inspections will be completed before the onset of the fire season to the maximum extent possible. Helicopters that have not been inspected before the time of need, will be inspected when the need arises, prior to being used on contract.

Federal Aviation Resources System: At the earliest opportunity after approving an aircraft the national aircraft database should be updated at:

http://www.aviation.fs.fed.us/carding/logon.asp

The procedure for updating the Fed Resources database can be found in Chapter 4 of this guide.

Inspection Records: Completed Aircraft Contract Status Reports and Aircraft Pre-use Inspection Discrepancy Report forms for national aircraft should be sent to the FS Aviation Unit at NIFC within ten days after completion of the inspection.

Remember, it is extremely important to report the completion of inspections done for the WO Aviation Unit to that unit promptly and accurately. Delay causes much confusion and expense, and can seriously hamper availability of aircraft for dispatch.

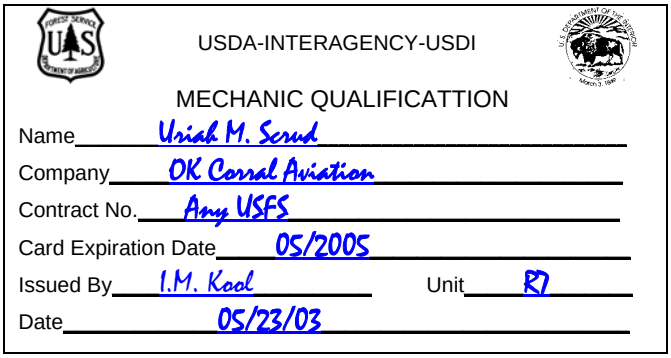
V. Avionics inspections. All contract aircraft will have an avionics conformity inspection performed by a USFS-approved inspector with an AV1, AV2 or AV3 rating. Which rating depends on the mission the aircraft is required to perform. Just because an inspector *can* inspect the avionics does not mean they *should* inspect it. What is best for our customers and how complex the mission, must limit our actions.

Interagency Fire Aircraft (Interagency Fire Aircraft for the purposes of this guide is any aircraft in which the installation of a VHF-FM radio with GUARD receiver is required) and other aircraft identified by USFS shall have a functional check or performance test performed by a USFS approved avionics inspector, or an FAA Certified Repair Station using an approved checklist to ensure avionics equipment meet the requirements of the National Operational Test Standards.

VI. Other Contractor Personnel Qualifications. When required by contract maintenance personnel must complete an Aircraft Mechanic Qualification form (Figure 10-9). The inspector will review the information submitted to insure that the experience and training requirements are in compliance with the procurement agreements. A Mechanic Qualification Card (Figure 10-10 and below) will be issued if the procurement

document requires one. Mechanic cards can be issued for the life of the contract. Mechanic cards are contract and operator specific. When the contract expires the card is no longer valid. Along the same lines, if the operator no longer employs that mechanic, the card is no longer valid.

Note: Many vendors have multiple contracts, which means an aircraft could be on an Exclusive-Use and a Call-When-Needed contract at the same time. It is therefore acceptable to annotate on Mechanic and Fuel Service Vehicle cards "Any USFS," in order to avoid having to note multiple contract numbers on one of these cards, or having to issue multiple cards for the same vehicle or mechanic.


USDA-INTERAGENCY-USDI

MECHANIC QUALIFICATTION

Name Uriah M. Scrud

Company OK Corral Aviation

Contract No. Any USFS

Card Expiration Date 05/2005

Issued By I.M. Kool Unit R7

Date 05/23/03

Figure 11-1 –Mechanic Qualification Card

VII. Fuel Vehicle. Fuel trucks are normally provided for all helicopters. The back page of the FS 5700-21a, Helicopter Data Record, Section VI (Figure 11-4) has a checklist of items to inspect on the fuel truck. There may be various additional equipment items required by some contracts, so be sure to check the contract for items of this nature. Normally the card expiration date will be the same as the helicopter.

INTERAGENCY DATA CARD
SERVICE TRUCK

CONTRACTOR O.K. Corral Aviation
ADDRESS 123 Burning Tree Rd.
Los Angeles, CA 91325
TRUCK TYPE F-350
LICENSE NO. FRD 345 CA
CAPACITY GAL. 800 FUEL TYPE Jet A
CARD EXPIRATION DATE 05/2003
CONTRACT/RENTAL NO. 54-024B-2-2165
APPROVED BY I.M. Kool
DATE 7/05/03

Figure 11-2 – Interagency Service Truck Card

VIII. Call When Needed (CWN) Aircraft.

A. CWN Helicopters. Regional inspectors usually inspect helicopter operators located in their region. The WO Aviation Unit has responsibility for scheduling National CWN helicopter inspections. For operators with large numbers of National CWN aircraft, regional inspectors may be requested to assist in these inspections. The teams are expected to coordinate the inspection effort with their OAS counterparts within their respective regions. Regional inspectors with high inspection workloads should ask for assistance as soon as possible.

B. CWN Light Aircraft. Most CWN light aircraft are on regional contracts, so these are usually the responsibility of the regional inspectors. If a large workload is anticipated, contact the national office for assistance at the earliest opportunity.

C. Point-to-Point Cards. Point-to-Point cards are normally issued for two years. Inspections of the aircraft are not required, and for the most part are discouraged. These aircraft are available for charter by the public, and it is felt that the FAA provides all the oversight necessary. The only requirement inspectors have regarding issuance of these cards is to verify that the aircraft is approved in the Ops Specs of the vendor's D085, and is approved for the type mission contracted for (i.e. passenger/cargo). If the aircraft is listed in the Ops Specs as passenger/cargo, the contractor must demonstrate to the discretion of the USFS Inspector, the necessary equipment to safely satisfy each configuration. Any further inspection done by Forest Service inspectors would be a duplication of effort. However, if an inspector is around one of these aircraft and they notice a discrepancy, it should be brought to the attention of the vendor. As a matter of fact, when carding point-to-point aircraft if discrepancies are noted a card should not be issued until the repairs are made. Additionally, these aircraft must meet the minimum

requirements of FSH 5709.16 (11.24), which is covered in Chapter 7 of this guide. An example of a Point-to-Point card can be found on Figure 11-5.

IX. Return to Contract Use. When an aircraft is removed from contract use and declared "out of service" for aircraft maintenance purposes, the process for returning the aircraft to contract use by the agency is as follows:

A. Maintenance "Approval For Return To Service." A maintenance release signed and dated by the contractor's maintenance representative on an operating document, which identifies the work done; stating that the maintenance is complete and the aircraft is airworthy and approved for return to service.

An operating document is any document or form that the operator uses to document aircraft maintenance activity and airworthiness, i.e.; Daily flight log, Pilot daily log, Aircraft daily flight and maintenance log, aircraft maintenance logs.

If a repair is <u>other</u> than a minor repair, (or a scheduled inspection, component change, etc.), the appropriate agency Aviation Maintenance Inspector (AMI) is normally contacted for approval for continued use under the contract. The majority of the time inspectors will be able to do this over the phone. The normal practice under these circumstances is to either have the contractor fax copies of the log entries for inspector review, or have the manager retain the copies with his/her diary. Some inspectors want copies of all repairs, while others only keep them for major items. It is a judgment call on the inspectors part which way to handle it, and on whether they need to re-inspect an aircraft, or not. As a minimum, copies of the logs for these type repairs should be retained by the COR/manager with their diaries.

Note: There will be times when an inspector will want to re-inspect an aircraft following a major repair or component replacement, before allowing it to return to contract use. Be advised, once an operator notifies the COR that an aircraft is approved for return to service, their availability begins at that point (unless there are still problems with the aircraft during the re-inspection). If a decision on whether to re-inspect is not made until the last minute, and it takes the inspector several hours or more to arrive at the aircraft, the vendor will be paid for the time they are sitting on the ground awaiting the inspector's arrival. Most managers will provide plenty of notice to allow inspectors to get to the aircraft before the maintenance is completed. Don't wait till the last minute to decide to inspect an aircraft under these circumstances. Proper planning can save the government hundreds and possibly thousands of dollars.

The agency COR/manager must notify the regional AMI before the aircraft is returned to contract use for major items listed in the FSH 5709.16, Chapter 44.11, Fixed-Wing aircraft; and Chapter 44.12 for Rotor Wing aircraft.

These items are also listed in the "Interagency Helicopter Operating Guide" (IHOG) chapter 14, Helicopter Maintenance. The IHOG requires helicopter managers to contact a maintenance inspector for a return to contract service for any of the following:

Engine removal and replacement.

Rotor removal and replacement.

Power train component removal and replacement.

B. Flight Check. A flight check, if required, is performed by an authorized company pilot and a statement in the operating document stating the aircraft is returned to service, dated and signed by the pilot performing this duty, in accordance with FAR 91.407(b). **Operational checks required by an Aircraft Inspector must be reasonable. If a contractor indicates they believe an operational check is unreasonable, contact the Contracting Officer for resolution before proceeding.**

X. 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. However, at some point inspectors may happen across an aircraft that has a safety or airworthiness issue that they believe must be corrected before the aircraft can continued to be used. What steps should the inspectors take? It depends on the type aircraft and mission.

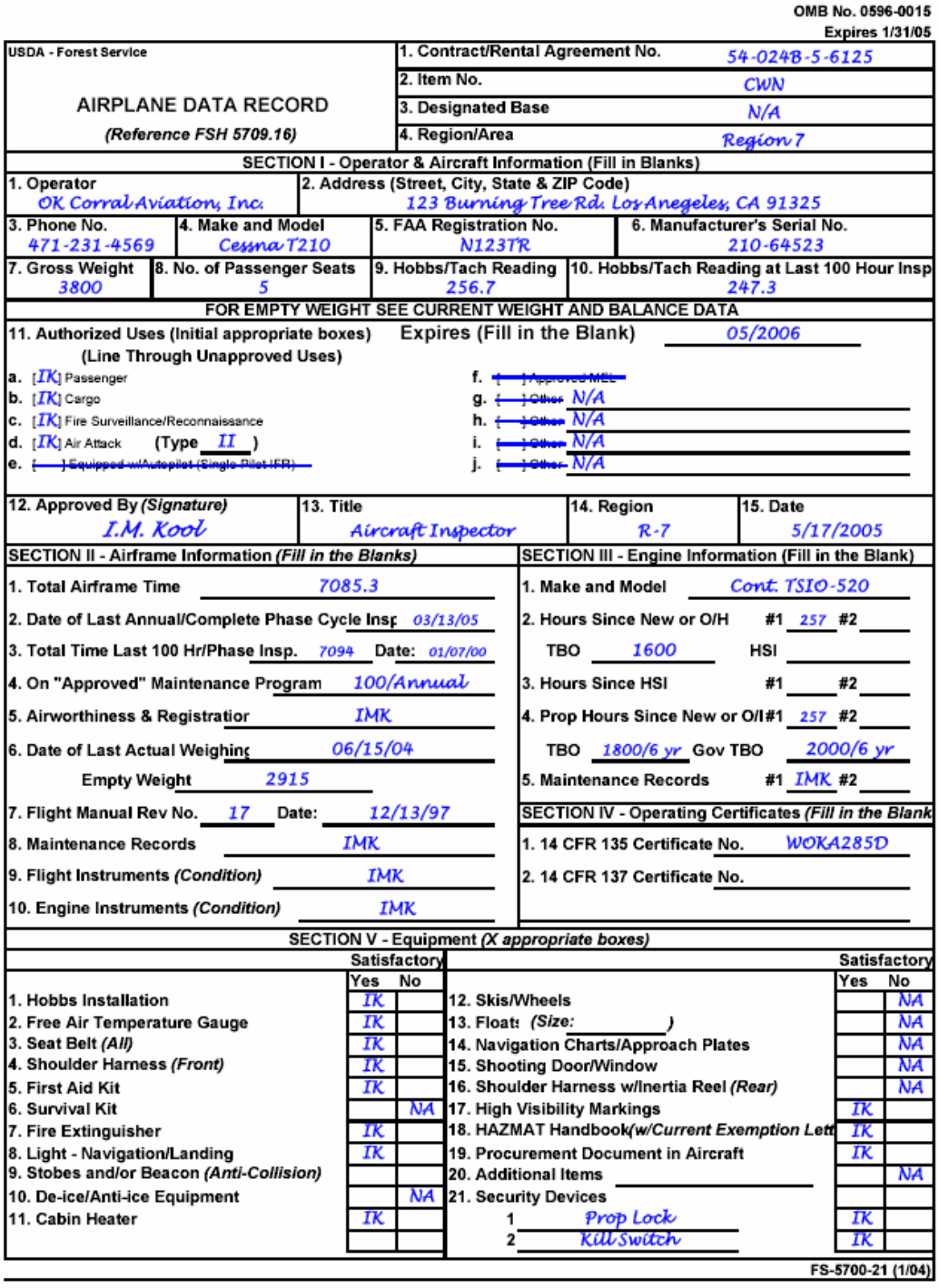
For aircraft with a COR, the COR should be informed to suspend operations until the aircraft is repaired. This is normally not a problem as COR's will usually call an Aircraft Inspector whenever they become aware of a discrepancy on an aircraft, and will not allow the aircraft to be dispatched until the issue is resolved to the Inspector's satisfaction. As we stated in the contracting section, every helicopter will have a manager assigned who acts as the COR. For air tankers the COR's are the tanker base managers where the aircraft is located.

With most light fixed wing aircraft it is a different matter. While quite often an Air Tactical Group Supervisor (ATGS) is assigned as COR's for exclusive use Air Attack aircraft, very rarely is a COR assigned to the remainder of the light fixed wing fleet. This is always true for point to point aircraft. A problem arises since these aircraft quite often operate in more than one forest or region, and very rarely is there any centralized control. A problem may be identified and the operator may still elect to fly the aircraft away, or take it somewhere else and continue to operate.

Under these circumstances, when there is not a COR, or the CO is not readily available to demand suspension of operations, if the inspector feels that a safety or airworthiness issue exists that require suspending operations, they have the authority to remove the card until repairs are made. But be careful. Once a card is pulled, the operator is liable to the government for any re-inspection costs. Do not put the government into a situation where it is unduly hampering or causing a vendor to experience unwarranted extra expenses. Normally do not take such a drastic step unless it is believed that the vendor is being grossly negligent, or is putting lives in jeopardy by

continuing to operate the aircraft. Also, at the earliest opportunity contact the CO and inform them of the reasons for rescinding the card.

Most inspectors usually end up carrying 20 or 30 pounds of equipment, copies of forms, contracts, various types of reference material, etc., wherever they go. The old saying “a picture is worth a thousand words” comes to mind. If possible carry a small digital camera to document problems found. It can also come in handy when wanting to pass visual information on to counterparts in other regions.



OMB No. 0596-0015
Expires 1/31/05

USDA - Forest Service

AIRPLANE DATA RECORD

(Reference FSH 5709.16)

1. Contract/Rental Agreement No.	54-024B-5-6125
2. Item No.	CWN
3. Designated Base	N/A
4. Region/Area	Region 7

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

1. Operator	2. Address (Street, City, State & ZIP Code)		
OK Corral Aviation, Inc.	123 Burning Tree Rd. Los Anegeles, CA 91325		
3. Phone No.	4. Make and Model	5. FAA Registration No.	6. Manufacturer's Serial No.
471-231-4569	Cessna T210	N123TR	210-64523
7. Gross Weight	8. No. of Passenger Seats	9. Hobbs/Tach Reading	10. Hobbs/Tach Reading at Last 100 Hour Insp
3800	5	256.7	247.3

FOR EMPTY WEIGHT SEE CURRENT WEIGHT AND BALANCE DATA

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

Expires (Fill in the Blank) 05/2006

a. [IK] Passenger
b. [IK] Cargo
c. [IK] Fire Surveillance/Reconnaissance
d. [IK] Air Attack (Type II)
e. [ ] ~~Equipped w/Autopilot (Single Pilot IFR)~~
f. [ ] ~~Approved MEL~~
g. [ ] ~~Other~~ N/A
h. [ ] ~~Other~~ N/A
i. [ ] ~~Other~~ N/A
j. [ ] ~~Other~~ N/A

12. Approved By *(Signature)*	13. Title	14. Region	15. Date
I.M. Kool	Aircraft Inspector	R-7	5/17/2005

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

1. Total Airframe Time: 7085.3
2. Date of Last Annual/Complete Phase Cycle Insp: 03/13/05
3. Total Time Last 100 Hr/Phase Insp.: 7094 Date: 01/07/00
4. On "Approved" Maintenance Program: 100/Annual
5. Airworthiness & Registratior: IMK
6. Date of Last Actual Weighing: 06/15/04
   Empty Weight: 2915
7. Flight Manual Rev No.: 17 Date: 12/13/97
8. Maintenance Records: IMK
9. Flight Instruments *(Condition)*: IMK
10. Engine Instruments *(Condition)*: IMK

SECTION III - Engine Information (Fill in the Blank)

1. Make and Model: Cont. TSIO-520
2. Hours Since New or O/H #1 257 #2
   TBO 1600 HSI
3. Hours Since HSI #1 #2
4. Prop Hours Since New or O/I #1 257 #2
   TBO 1800/6 yr Gov TBO 2000/6 yr
5. Maintenance Records #1 IMK #2

SECTION IV - Operating Certificates *(Fill in the Blank*

1. 14 CFR 135 Certificate No.: WOKA285D
2. 14 CFR 137 Certificate No.:

SECTION V - Equipment *(X appropriate boxes)*

	Satisfactory Yes	No		Satisfactory Yes	No
1. Hobbs Installation	IK		12. Skis/Wheels		NA
2. Free Air Temperature Gauge	IK		13. Floats *(Size:)*		NA
3. Seat Belt *(All)*	IK		14. Navigation Charts/Approach Plates		NA
4. Shoulder Harness *(Front)*	IK		15. Shooting Door/Window		NA
5. First Aid Kit	IK		16. Shoulder Harness w/Inertia Reel *(Rear)*		NA
6. Survival Kit		NA	17. High Visibility Markings	IK	
7. Fire Extinguisher	IK		18. HAZMAT Handbook*(w/Current Exemption Lett*	IK	
8. Light - Navigation/Landing	IK		19. Procurement Document in Aircraft	IK	
9. Stobes and/or Beacon *(Anti-Collision)*			20. Additional Items		NA
10. De-ice/Anti-ice Equipment		NA	21. Security Devices		
11. Cabin Heater	IK		1 Prop Lock	IK	
			2 Kill Switch	IK	

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Figure 11-3 – FS-5700-21 (Front Page)

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

	Pass	Fail		Satisfactory Pass	Satisfactory Fail
1. ELT - Battery Due Date (Sep-07)	IK		26. Automated Flight Following System		NA
2. ELT 91.207 Complied With	IK		27. Audio Controls *(No.* 2)	IK	
3. ELT TSO# 91a (X) 126a ( )	IK		28. Transmitter Selectors	IK	
4. #1 VHF-AM Comm. Transceiver 720 X760	IK		29. Receiver Selectors	IK	
5. #2 VHF-AM Comm. Transceiver 720 760	IK		30. Microphone/Drop Cords	IK	
6. #1 VHF-FM Comm. Transceiver (Type 138B)	IK		31. Trasnceiver PTT	IK	
7. #2 VHF-FM Comm. Transceiver (Type 138B)	IK		32. ICS Hot Mic/VOX	IK	
8. #3 VHF-FM Comm. Transceiver (Type)		NA	33. ICS PTT	IK	
9. Aux FM Provisions		NA	34. Check Pilot ICS	IK	
10. GPS or LORAN *(Panel Mounted / Handheld)*	Panel	~~Hand~~	35. Rear Seat PTT	IK	
(Mark IFR / VFR as applicable)	~~IFR~~	VFR	36. ICS 2,3,4 or 4 Inph Positions	IK	
11. GPS Database *(Expiration D* 06/28/05)	IK		----------		
12. Transponder (Per 91.413) *(Due* May-07)	IK		37. Avionics Placarding	IK	
13. Altimeter/Static (Per 91.411)*(Du* May-07)	IK		38. General Condition	IK	
14. #1 VOR/LOC *(IFR 30 Day Du* 4/17/2005)			39. Avionics Records	IK	
15. #2 VOR/LOC *(IFR 30 Day Du*)			40. Accessory Power (3 Pin)	IK	
16. Glideslope	IK		41. Supplementary Radio Kit Capability	IK	
17. Marker Beacon	IK		42. Other		
18. DME or TACAN	IK		43. Other		
19. ADF or IFR GPS Substitute	IK		44. Other		
20. Magnetic Compass Placard (per 23.1547)	IK		45. Other		
21. Cockpit Voice Recorder		NA	46. Other		
22. Flight Data Recorder		NA		-----	-----
23. GPWS		NA	----------	-----	-----
24. TCAS/TCAD		NA	47. Avionics Inspection Completed By:	-----	-----
25. Autopilot w/Flight Director		NA		-----	-----
-----	-----	-----	I.M. Kool	-----	-----
-----	-----	-----		-----	-----

Notes/Discrepancies:

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0015. The time required to complete this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Figure 11-3 (Cont.) – FS-5700-21 (Back Page)

OMB No. 0596-0015
Expires 1/31/05

USDA - Forest Service

INTERAGENCY FIRE

HELICOPTER DATA RECORD

(Reference FSH 5709.16)

1. Contract/Rental Agreement No.: 54-024B-5-6122
2. Item No.: CWN
3. Designated Base: N/A
4. Region/Area: Region 7

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

1. Operator	2. Address (Street, City, State & ZIP Code)			
OK Corral Aviaiton, Inc.	123 Burning Tree Rd., Los Angeles, CA 91325			
3. Phone No.	**4. Make and Model**	**5. FAA Registration No.**	**6. Manufacturer's Serial No.**	**7. Hobbs Reading**
471-231-4569	Bell 407	N23456	7536	1253.7

8. Max Gross Weight	9. Max Gross Weight	10. No. of Passengers	11. Type Fuel	12. Fuel Flow (Cruise)
(Internal) 5200	*(External)* 6000		Jet A	45 G.P.H

FOR EMPTY WEIGHT SEE CURRENT WEIGHT AND BALANCE DATA

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

Expires (Fill in the Blank): 05/2006

a. [IK] Passenger & Cargo	h. [IK] Fire Suppression - Interagancy	o. ~~[ ] Approved Load Seat Ops~~
b. [IK] Low Level Reconnaissnace	i. [IK] Fire Suppression - Local	p. ~~[ ] Approved MEL~~
c. ~~[ ] Cargo Only (Restricted Category)~~	j. [IK] Water/Retardant Bucket	q. [ ] Other N/A
d. [IK] External Load (Sling)	k. ~~[ ] Hoistable~~	r [ ] Other N/A
e. [Ik] Rappeling	l. [IK] Longline/Remote Hook	s. [ ] Other N/A
f. [IK] Aerial Ignition	m. [IK] Rapid Refuel ~~Dual~~ X Splash	t. [ ] Other N/A
g. ~~[ ] Manager May Ride (Type I ONLY)~~	n. ~~[ ] Air Attack Type(~~ N/A)	u. [ ] Other N/A

14. Approved By *(Signature)*	15. Title	16. Region	17. Date
I.M. Kool	Aircraft Inspector	R-7	05/17/05

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

1. Total Airframe Time: 3256.4
2. Date of Last Annual/Phase Inspection: 05/03/05
3. Last Inspection Type: P-6 Time: 1517.8
4. On "Approved" Maintenance Program**: Bell Phase
5. Airworthiness & Registration: IMK
6. Date of Last Actual Weighing (24 M: 05/16/05
   Equipped Weight: 2878.9 Bid Weight: 2915.0
7. Flight Manual Rev No.: 8 Date: 08/05/01
8. Time Change & AD Listing **: IMK
9. Maintenance Records: IMK
10. Flight Instruments *(Condition)*: IMK
11. Engine Instruments *(Condition)*: IMK

SECTION III - Engine Information (Fill in the Blank)

1. Make & Model: 250-C47B
2. Total Time: #1 256.7 #2
3. Hours Since New or O/H: #1 256.7 #2
   TBO 2000/Modular HSI
4. Hours Since HSI: #1 N/A #2
5. Maintenance Records: #1 IMK #2

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

1. 14 CFR 133 Certificate No.: WOKL285D
   Expiration Date: 1/31/2007
2. 14 CFR 135 Certificate No.**: WOKA285D
3. 14 CFR 137 Certificate No.: WOKG285D

SECTION V - Equipment *(X appropriate boxes)*

	Satisfactory Yes	Satisfactory No
1. Hobbs Installation **	IK	
2. Free Air Temperature Gauge **	IK	
3. Seat Belt *(All)* **	IK	
4. Shoulder Harness *(All after 01/01/06)* **	IK	
5. First Aid Kit **	IK	
6. Survival Kit **	IK,	
7. Dual Control *(For Pilot Check)* **	IK	
8. Lighting - Night Operation **	IK	
9. High Visibility Marking Main Rotor **	IK	
10. Extended Height Gear **	IK	
11. Convex Mirror **	IK	
12. Locking Fuel Cap		N/A
13. Cargo Hook ** *(Last Inspect* 1/13/2005)	IK	
14. Long-Line - Remote Hook *(Last Inspected* 2/23/2005)	IK	
15. Personnel Access Step **	IK	
16. Water/Retardant Bucket ** (** Either 16 or 17) Type Bambi Gallons 324	IK	
17. Fixed Retardant Tank ** Type N/A Gallons		N/A
18. Bucket/Door SW on Collective **	IK	
19. Tundra or Snow Pads		N/A
20. Litter Kit *(No. of Litters*)		N/A
21. Closed Circuit Refueling		N/A
22. Defuel Capability	IK	
23. Rappel Anchor *(Last Inspected* 2/15/2005)	IK	
24. Auxiliary Fuel Tanks Extender		N/A
25. Baggage Compartment or Cargo Racks **		N/A
26. Baggage Compartment Mod.		N/A
27. Fire Extinguisher **	IK	

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Figure 11-4 – FS-5700-21a (Front Page)

	Satisfactory			Satisfactory	
	Yes	No		Yes	No
28. Particle Separator	IK		36. HAZMAT Book *(w/CurrentExemption Letter)*	IK	
29. Engine Reignition Kit		N/A	37. Procurement Document in aircraft	IK	
30. Battery, Auxiliary or H.D.		N/A	38. Security Devices		
31. Heater, Type Bleed Air	IK		1. Collective Lock	IK	
32. Main Rotor Brake	IK		2. Cyclic Lock	IK	
33. Wire Cutter Kit	IK		3. Incorporated into preflight checklist	IK	
34. White Strobe **	IK		39. Other		
35. Operations Manual in aircraft	IK		40. Other		
** *Required for Interagency Fire*			41. Other		

SECTION VI - Service Truck *(X appropriate boxes)*

	Satisfactory			Satisfactory	
	Yes	No		Yes	No
1. Capacity** 800 U.S. Gallons			13. Fuel Hoses *(Approved Type)***	IK	
2. Type Truck F-350			14. Mechanized Reel	IK	
3. License No. FRD 345 CA			15. Ground & Bonding Cables **	IK	
4. Condition	IK		16. Fuel Filtering System **	IK	
5. Fire Extinguishers (2 each 20-B,C) **	IK		17. Date Filter Changed **	IK	
6. Placarded - 49 CFR 172 **	IK		18. Spare Filters **	IK	
7. Marked w/Type Fuel - 3 Inch Letters **	IK		19. Gas Engine Protection		N/A
8. No Smoking Signs - 3 Inch Letters **	IK		20. FM Radio	IK	
9. Sump & Drain **	IK		21. Spill Kit ** ( )Gallons Minimum	IK	
10. Fuel Meters **	IK		22. Filter Manufacturer's Manual	IK	
11. Differential Pressure Gauge(s)	IK		23. Record for recording sump draining **	IK	
12. Nozzle Screen/Dust Cap **	IK		24. Other		

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

	Pass	Fail		Pass	Fail
1. ELT - Battery Due Date (May-06)	IK		19. Audio Controls ** *(No.* 2)	IK	
2. ELT 91.207 Complied With	IK		20. Transmitter Selectors	IK	
3. ELT TSO# ** 91a (IK) 126 ( )	IK		21. Receiver Selectors	IK	
4. #1 VHF-AM Comm. Transceiver ** [ ]720 [IK] 760	IK		22. Microphone/Drop Cords (U-92A/U**)	IK	
5. #2 VHF-AM Comm. Transceiver [ ]720 [IK] 760		N/A	23. Transceiver PTT	IK	
6. #1 VHF-FM Comm. Transceiver (Type 138B)	IK		24. Rappel Audio Control & Drop Cord	IK	
7. #2 VHF-FM Comm. Transceiver (Type)		N/A	25. ICS Hot Mic/VOX (Pilot/Copilot **)	IK	
8. Aux FM Provisions **	IK		26. ICS PTT **	IK	
9. GPS *(Panel Mounted ** / Handheld)*	Panel	~~Hand~~	27. Rear Seat PTT (2 Aft Cabin Exits **)	IK	
(Mark IFR / VFR as applicable)	~~IFR~~	VFR	----------		
10. GPS Database *(Expiration D* 07/15/05)	IK		28. Avionics Placarding	IK	
11. Transponder **(Per 91.413) *(Due D.* Jul-06)	IK		29. General Condition	IK	
12. Altimeter/Static** (Per 91.411)*(Due* Jul-06)	IK		30. Avionics Records, Diagrams & Schematics	IK	
13. Magnetic Compass Placard (per 27.1547)	IK		31. Accessory Power (3 Pin) **	IK	
14. TCAS/TCAD		N/A	32. Cargo Hook Connector (9 pin) **	IK	
15. Automated Flight Following System		N/A	33. Other		
16. Verify AFF Operational		N/A	34. Other		
17. Other			35. Other		
18. Other			36. Other		
			37. Avionics Inspection Completed By: I.M. Kool	IK	

** *Required for Interagency Fire*

Notes/Discrepancies:

FS-5700-21a (1/05)

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Figure 11-4 (Cont.) – FS-5700-21a (Back Page)

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

Procurement Office: Wasatch-Cache N.F.

BPA or Contract No: 54-024B-4-2165

Company: O.K. Corral Aviation

Aircraft Type: Cessna 421C

"N" Number: N987CS

Authorized Operations: Day VFR [IK **] Night [** IK **] IFR [** IK **]**

O.U. Kasanski	I.M. Kool
Company Rep Signature	**Gov't Rep Signature**
05/15/2001	05/2003
Approval Date	**Expiration Date**

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

* U.S. GPO: 1997-690-103

Figure 11-5 – Point-To-Point Card

UNITED STATES
DEPARTMENT OF AGRICULTURE
FOREST SERVICE

AIRCRAFT CONTRACT STATUS REPORT

Contractor	Gov't. Team Members	Contract No.
OK Corral Aviation, Inc.	I.M. Kool U.R. Okedokie	55-024B-5-2133
		Item No. 8
		Start Date 05/16/2003

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

Pilot(s)	Mechanic	Aircraft
		N23456

☐ 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 to the FS National Aviation Maintenance 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:
Survival Kit missing candles & Knife
Engine leak at oil pressure line "B" nut.

☒ INSPECTED WITH 2 DISCREPANCIES (SEE ATTACHED LIST)	SIGNATURE I.M. Kool	DATE 05/16/2003
☐ DISCREPANCIES CORRECTED (ATTACH DOCUMTENTATION)	SIGNATURE	DATE
☐ REINSPECTION REQUIRED AS NOTED	SIGNATURE	DATE
☐ APPROVED	SIGNATURE	DATE

I acknowledge receipt of this report I.M. Scrud (Signature of Contractor/Representative) 05/16/2003 (Date)

Reported By: I.M. Kool (Signature of Government Representative) Title: Aircraft Inspector Date: 05/16/2003

CONTRACTING

4/97

Figure 11-6 – FS 5700-32 Aircraft Contract Status Report

AIRCRAFT PRE-USE INSPECTION DISCREPANCY REPORT

OPERATOR O.K. Corral Aviation
BASE CWN
AIRCRAFT TYPE Bell 407
AIRCRAFT NUMBER N23456
CONTRACT NUMBER 55-024B-5-2133

Contract Page # 8
Item No. C.4 D 6
Discrepancy: Survival Kit missing candles & knife
Corrective Action: Replaced candles and knife
By U.R. Scrud

Contract Page # 7
Item No. C.2 2
Discrepancy: Engine leak at oil pressure line "B" nut.
Corrective Action: Replaced oil pressure line, logbook entry attached
By U.R. Scrud

Contract Page #
Item No.
Discrepancy
Corrective Action
By

Contract Page #
Item No.
Discrepancy
Corrective Action
By

Discrepancies written by: I.M. Kool 05/16/03
Date
Corrective action inspected by: U.R. Scrud 05/17/03
Authorized Contractor Maintenance Supervisor Date
A&P / IA / REPAIR STATION NUMBER A&P 5689812

White Copy: Contracting – NIFC
Yellow Copy: Contractor
Pink Copy: Contractor
(Send to Inspector when Discrepancies Corrected)

Revised 1/1997

Figure 11-7 – FS 5700-33 Aircraft Pre-Use Inspection Discrepancy Report

XI. Load Calculation. The following is an explanation on how to complete a load calc during a pre-use inspection. In this example, we will assume Section B of the contract lists a performance spec of **5000** feet pressure altitude, **20** degrees C, with a non-jettisonable payload of **950** pounds, using the Hovering Out of Ground Effect (HOGE) Charts. The spec also states that a pilot weight of **200** pounds and fuel for 1 hour and 30 minutes will be used.

1. Fill in Model, "N" Number, Date.

2. Enter information in **PA & OAT** (**5000 ft & 20°C**). It doesn't matter if item 1 or 2 is completed as the most restrictive condition is not of interest in this case. Instead the goal is to ensure the aircraft meets the specification.

3. Enter the Equipped Weight from the aircraft Weight & Balance in item 3. **2915**.

4. In item 4, enter a pilot weight of **200** pounds.

5. Calculate Fuel and enter it in item 5. In this case a Bell 407 burns 45 gallons per hour. 45 gph X 1.5 hrs = **67.5** gallons. Standard weight for Jet A fuel is **7** pounds. 67.5 gallons X 7 lbs = **473** lbs.

6. Add items 3, 4 and 5, and insert the total in item 6. **3588**.

7. From the Bell 407 Flight Manual, Hover Out of Ground Effect chart, determine the computed gross weight for 5000 feet and 20°C, and enter it in item 7b. **5400**. Frequently wrong charts are used when making these calculations, therefore the chart used should also be entered in 7a in the event there is a question later on about which chart was used. Also, as stated above, the goal is to verify the aircraft meets the specification, so only the HOGE part of the form needs to be filled out when checking against a specification.

8. Enter the Weight Reduction (download) on line 8. For a Bell 407 it is **155** pounds. The download for most aircraft is listed inside the front cover of the forms book. The current download figures can also be found in Section J of the contract. The download represents a "margin of safety" to ensure the aircraft always operates well below its certificated maximum gross weight.

9. Subtract 155 pounds from the computed gross weight of item 7, and enter the result in item 9. **5245**.

10. Determine what the maximum gross weight is from the Limitations Section of the Flight Manual and enter it in line 10. **5250**.

11. For item 11, enter the lowest of item 9 or 10. **5245**.

12. On line 12, enter the weight from item 6. **3588**.

13. Subtract item 12 from item 11 and enter the result in line 13. **1657**.

If the Allowable payload in item 13 is less than the spec payload, in this case **950** pounds, the aircraft does not meet the performance spec and the next step would be to notify the Contracting Officer.

INTERAGENCY HELICOPTER LOAD CALCULATION OAS-67/FS 5700-17 (11/03)		MODEL Bell 407 N# 23456
PILOT(S)	O.K. Corral Aviation CWN	DATE 07/05/04
MISSION		TIME

1 DEPARTURE	PA	OAT	☐
2 DESTINATION	PA 5000	OAT 20C	☐
3 HELICOPTER EQUIPPED WEIGHT		2915	
4 FLIGHT CREW WEIGHT		200	
5 FUEL WT (__67.5__ gallons X __7__ lbs per gal)		473	
6 OPERATING WEIGHT (3 + 4 + 5)		3588	

	Non-Jettisonable		Jettisonable
	HIGE	HOGE	HOGE-J
7a PERFORMANCE REF (List page/chart from FM)		P49, fig 4-5	
7b COMP GROSS WT (FM Performance Section)		5400	
8 WT REDUCTION (Req for all Non-Jettisonable)		155	
9 ADJUSTED WEIGHT (7b minus 8)		5245	
10 GROSS WT LIMIT (FM Limitations Section)		5250	
11 SELECTED WEIGHT (Lowest of 9 or 10)		5245	
12 OPERATING WEIGHT (From Line 6)		3588	
13 ALLOWABLE PAYLOAD (11 MINUS 12)		1657	

14 PASSENGERS/CARGO MANIIFEST	
15 ACTUAL PAYLOAD (Total of all weights listed in Item 14) Line 15 must not exceed Line 13 for the intended mission.	
PILOT SIGNATURE	HazMat
MGR SIGNATURE	Yes____ No____

Figure 11-8 – FS-5700-17 Interagency Helicopter Load Calculation

NOTES

Chapter 12 – Oversight of Aircraft/Operator Programs

I. Introduction. This chapter reviews the processes and procedures for conducting oversight of contractors. The checklists are divided into three parts; A. Operator Inspections, B. Contract Compliance Inspections and C. Aircraft Inspections While On Contract. The following is provided as a guide to help in developing standards and procedures when performing oversight of these operators and their aircraft. It can also be handy in finding particular references. 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 8300.10 references, the Volume and Chapter are listed, (i.e. 8300.10, 3-131, would indicate Volume 3, Chapter 131).

		Reference
	A. OPERATOR INSPECTIONS	
	Review Operating Provisions/Procedures	
	Review operating certificates for: a. Certified for all operations conducted	
	1) Part 133	133.11, Contract
	2) Part 135	119.1, 135.1, Contract
	3) Part 137	137.11, Contract
	4) Part 145	145.5 145.59, 145.61
	b. Operations Specifications current and complete	119.43, 119.49(c), 8300.10, 2-84
	c. Operations Manuals current and complete	119.43, 135.21, 8300.10, 2-93
	Is there sufficient staffing for the work being performed?	135.423(a)(b)(c), 135.425(b), 135.429(b), 145.151, 145.153, 145.157, 8300.10, 3-131
	Are personnel properly trained, qualified and authorized?	43.3, 43.7, 43.13, 65.81, 91.403(c), 135.429(b), 145.151, 145.155, 145.157, 145.163, 145.211(c)(1)(iv), Procedures Manual
	Are Maintenance and Inspection functions accomplished in accordance with the Operator's Procedures Manual?	Procedures Manual, 8300.10, 2-91, 8300.10, 3-131
	Are aircraft inspection programs FAA approved?	
	a. 100/Annual	91.409(a), (b)
	b. Progressive Inspections	91.409(d),91.409(f)4)

	c. Manufacturers Inspection Program	91.409(f)(3)
	d. Approved Aircraft Inspection Program (AAIP)	91.409(f)(2), 135.419, 8300.10, 2-83
	e. Continuous Airworthiness Inspection Program	91.409(f)(1)
	Are there procedures for ensuring the PIC reports and records mechanical irregularities, before, during and after flight?	91.213(a)91.405(c), 135.23(f), Procedures Manual
	Are there procedures for ensuring the PIC knows that required inspections have been made?	43.5, 43.11, 91.417(a), 135.23(e), Procedures Manual
	Are there procedures for ensuring the PIC knows the aircraft has been approved for return to service?	43.5, 43.9, 91.405(b), 91.417(a)(1), Procedures Manual
	Are there procedures to be followed by the PIC to determine that mechanical irregularities or defects previously reported or recorded have been corrected or deferred?	43.5, 43.9, 91.213, 91.405(b), 135.23(g), Procedures Manual
	Are there procedures to be followed for deferring items?	43.5, 91.213, 135.23(i), Procedures Manual
	Are there procedures under FAR 91.213 (inoperable instruments and equipment) for release or continuation of flight if items become inoperative?	43.5, 91.213, Procedures Manual
	Are there procedures for preparing airworthiness release?	43.5, 43.9, 43.11, 91.407, 145.211(c)(1)(vii), Procedures Manual
	Is there a procedure established for keeping copies of the maintenance logs in the aircraft?	Procedures Manual, Contract
	Does the operator have an approved drug testing program?	135.251, (Part 121, App I), Procedures Manual
	Weight and Balance	8300.10, 2-75
	Are there procedures for ensuring compliance with weight and balance limitations.	91.9 (a), 135.23(b), 135.63(c), Contract
	Are the following areas covered: a. How equipment or weight changes are recorded? b. Where the pilot locates the latest empty weight and center of gravity figures? c. Loading procedures? d. Instructions for weighing aircraft including forms used, documenting scale calibrations?	91.9 (a), 135.23(b), Contract
	How does the operator determine the weight of all cargo?	135.23(b), 135.63(c), Contract
	Have gross weight increases for CAR 8 aircraft been documented in accordance with CAM 8?	CAM 8
	Are weight and balance documents completed in accordance with procedures?	91.9, 135.23(b), 135.63(c)

	Mechanical Reporting Procedures	8300.10, 3-128, 8300.10, 3-129, 8300.10, 3-130
	Does the operator have procedures for maintenance personnel to report and record mechanical irregularities?	43.5, 43.9, 91.405, 135.443, Procedures Manual
	Has the operator established procedures for keeping copies of aircraft maintenance logs in the aircraft for access by appropriate personnel?	Procedures Manual , Contract
	Does each aircraft have a maintenance log?	91.417, Contract
	Does the operator have procedures for recording mechanical discrepancies found during inspections or other maintenance?	43.5, 43.9, 43.11, 91.417, Procedures manual
	Does the operator have procedures for completing and submitting malfunction or defect reports? If so, are they following these procedures?	135.415, 135.416, 145.221, Procedures Manual, Contract
	Records System	8300.10, 2-92, 8300.10, 3-27, 8300.10, 3-41
	Are all records available to show that requirements for issuance of airworthiness release have been met?	43.9 135.439(a)(1)
	Are there records to reflect the total times in service on each: a. Airframe b. Engine c. Propeller d. Rotor	91.417(a)(2)(i), 135.439(a)(2)(i), 8300.10, 3-27, 8300.10, 3-41, Contract
	Status of life-limited parts on: a. Airframe b. Engine c. Propeller d. Rotor e. Appliance	91.417(a)(2)(ii), 135.439(a)(2)(ii), 8300.10, 3-27, 8300.10, 3-41, Contract
	Time since overhaul on items required to be overhauled?	91.417(a)(2)(iii), 135.439(a)(2)(iii), 8300.10, 3-27, 8300.10, 3-41, Contract
	Time since last inspection?	91.417(a)(2)(iv), 135.439(a)(2)(iv), 8300.10, 3-27, 8300.10, 3-41, Contract
	Do records for all maintenance include the following: a. Description of work performed b. Date of completion c. Signature and certificate number of person approving the aircraft for return to service	43.9, 135.443(b), 145.211(c)(1)(vii), 8300.10, 3-27, 8300.10, 3-41, Procedures Manual, Contract

	Do records for inspections include the following: a. Type inspection b. Brief description of the extent of the inspection c. Date of the inspection d. Total time in service of the aircraft e. Signature and certificate number of person approving the aircraft for return to service f. A statement certifying the airworthiness of the aircraft	43.11, 135.443(b), 145.211(c)(1)(vii), 8300.10, 3-27, 8300.10, 3-41, Procedures Manual, Contract
	AD/Mandatory SB Compliance	
	Are aircraft records maintained in accordance with 91.417(a)(2)(v)? Do they include the following: a. Method of compliance b. AD number and revision date c. Time and date of any recurring actions required by the AD	91.417(a)(2)(v), 135.439(a)(2)(v), 145.211(c)(1)(vii), 8300.10, 3-27, 8300.10, 3-41, Procedures Manual, Contract
	Is a current list of all AD's and mandatory SB's maintained in accordance with the procurement document?	91.417(a)(2)(v), 135.439(a)(2)(v), Contract
	Does the operator maintain records of approvals for alternate methods of compliance of AD's?	39.19, 39.21, 8300.10, 3-27, 8300.10, 3-41
	Does the operator's method of compliance meet the requirements of the AD'S? Select a representative number of AD's where it is possible to physically verify compliance status.	39.3, 39.11, 39.13, 39.19, 39.21
	If required, are all applicable TCTO's or Navy Service Bulletins complied with?	43.13, TCDS, Contract
	Major Repair and Alteration Conformity	8300.10, 2-1, 8300.10, 3-27, 8300.10, 3-41
	Does the operator have procedures for use when performing alterations?	43.5, 43.9, 43.13, 43, App. A & B
	Does the operator maintain a list of current major alterations and repairs to: a. Airframe b. Engine c. Propeller d. Rotor e. Appliance	91.417(a)(2)(vi), 135.439(a)(2)(vi), Contract
	Does the operator keep copies of the forms prescribed by FAR 43.9 for each major alteration to: a. Airframe b. Engine c. Propeller d. Rotor e. Appliance	43.9(d), 43 App. B 91.417(a)(2)(vi), 135.439(a)(2)(vi)
	Does the operator have procedures to determine if repairs and alterations are major?	43.7, 43.9, 43 App. A & B, FAR 1

	MEL/Deferred Maintenance	8300.10, 2-7, 8400.10, 4-4, 8700.10, 2-58
	Are the operator's MEL approved?	91.213, Ops Specs, LOA
	Is the operator's MEL current?	91.213, Ops Specs, LOA
	Is the operator making repairs within the time frame specified?	91.213, MEL, LOA
	Are the flight crews using approved MEL procedures to defer inoperable equipment?	91.213, MEL, LOA
	Is the MEL less restrictive than the MMEL?	91.213
	Maintenance Manuals	8300.10, 3-131
	Is all required technical data current and available: a. Airframe Maintenance Manuals b. Engine Maintenance Manuals c. Accessory/Component Maintenance Manuals	43.13(a), 91.403(c), 135.421, 145.109(a), 145.211(c)(1)(v)
	If microfiche readers used, are enough readers available/serviceable?	135.425(b), 145.103(a)(1), 145.109(a)
	If electronic versions are used, are enough computers available/serviceable ?	135.425(b), 145.103(a)(1), 145.109(a)
	Maintenance Program	8300.10, 2-91, 8300.10, 3-131
	Are the aircraft maintained by an approved maintenance program?	43.3, 43.7, 43.13, 91.403(c), 135.423(a), (c), 135.425
	Does the operator have an adequate organization to perform the tasks?	43.13, 91.403(c), 135.423(a)(b)(c), 135.425(b), 135.429, 145.103, 145.109, 145.151, 145.153, 145.155, 145.157
	Are personnel properly trained, qualified and authorized?	43.3, 43.7, 43.13, 65.81, 91.403(c), 135.425(b), 135.429, 135.433, 145.151, 145.153, 145.155, 145.157, 145.163, 145.211(c)(1)(iv)
	Has the operator approved a pilot to perform specific preventative maintenance items. If so, has the required approved training been accomplished.	43.3(g), 43.3(h), 43.3(i), Part 43 App. A, 135.433, Procedures Manual
	Are shift turnover procedures in place and utilized?	Procedures Manual

	Inspection Department	8300.10, 2-91, 8300.10, 3-131
	Is staff adequate for complexity of operation?	135.423(b), 135.423(c), 145.151
	Are personnel properly trained, qualified and authorized?	43.13, 43.15, 65.81 135.429(a), 135.433, 145.151, 145.155, 145.163, 145.211(c)(1)(iv)
	Are shift turnover procedures in place and utilized?	Procedures Manual
	Are functions accomplished in accordance with the Operator's Procedures Manual?	Procedures Manual
	Inspection System	8300.10, 2-91, 8300.10, 3-131
	Does the operator's inspection program meet all the requirements of FAR 43, Appendix D?	43.3, 43.5, 43.7, 43.15, 43 App. D
	If the operator utilizes a progressive inspection program has the program been reviewed and accepted?	91.409(d)
	If the operator utilizes an Approved Aircraft Inspection Program (AAIP) under 135.419 are all affected aircraft listed in paragraph D73 in the Ops Specs?	91.409(f)(2), 135.419
	Is the AAIP approved?	91.409(f)(2), 135.419, 8300.10, 2-83
	Does the AAIP contain inspection requirements for the following items: a. Airframe b. Aircraft engine c. Propellers/rotors d. Survival and emergency equipment e. Component parts for the above items f. Required test and checks in accordance with manufacturer's instructions g. Person responsible h. Instruction, procedures and standards to accomplish inspection i. Program for control of life-limited parts j. Schedule of inspections and overhauls k. Procedures for reporting and correcting mechanical irregularities	135.419
	Does the operator have adequate instructions and procedures for inspection buy-back and countermand requirements?	Procedures Manual
	Does the operator have procedures to ensure all required inspections are performed?	91.403, 145.211(c)(1)(vii), Procedures Manual
	Are there procedures for all required inspections to ensure they are done by someone other than the person that did the work?	135.429(c), 145.211(c)(1)(vii) Procedures Manual
	Does the operator have a procedure to ensure that required inspections and work left incomplete as a result of shift change or interrupted work are properly completed before the aircraft is released for service?	Procedures Manual
	Are shift turnover procedures in place and utilized?	Procedures Manual
	Training Programs	
	Does the operator's training program contain procedures to inform all personnel about techniques relating to equipment in use?	135.433, 145.155, 145.163, Procedures Manual

	Does the operator's training program contain procedures and instructions for inspection personnel?	135.429, 135.433, 145.155, 145.211(c)(1)(iv), Procedures Manual
	Are personnel performing maintenance adequately trained or qualified to perform those duties?	65.81, 65.83, 135.429, 135.433, 145.155, 145.211(c)(1)(iv), Procedures Manual
	Is there adequate documentation for the training program? Determine maintenance personnel qualifications.	135.429(e), 135.433, 145.163, 145.211(c)(1)(iv), Procedures Manual
	Does the operator's training program contain procedures for training contractor personnel, or for determining acceptability of contractor's training program?	135.429(e), Procedures Manual
	Maintenance Facilities	8300.10, 3-97, 8300.10, 3-131
	Does the operator have their own maintenance facilities? If So: a. Are facilities adequate for the work being performed?	135.425(b), 145.103(a)(1)(2), 145.109(a),(b),(c)
	b. Are required technical documents available for use current and applicable to equipment being operated?	43.13(a), 91.403(c), 135.421, 145.109(d), 145.211(c)(1)(v)
	c. Are receiving inspections accomplished IAW the Procedures Manual?	145.211(c)(ii), Procedures Manual
	d. Are parts and storage adequate?	135.425(b), 145.103(a)(2)(iv), Procedures Manual
	e. Are shelf life-limits established for items, and are these items controlled?	43.10, 135.425(b) Procedures Manual
	g. Are serviceable and unserviceable components segregated?	43.10, 145.103(a)(2)(iv), Procedures Manual
	h. Are required special tools and test equipment serviceable and calibrated?	43.13, 145.109(a),(b),(c), 145.211(c)(1)(viii), Procedures Manual
	i. Are fuel/oil/hazardous materials storage facilities maintained?	135.425(b), Procedures Manual
	j. Are hazardous materials segregated and properly stored?	135.425(b), 145.103(a)(2)(iv), Procedures Manual
	k. Is safety equipment available and serviceable?	135.425(b), 145.103(a)(1), 145.109(a), (c) Procedures Manual
	l. Are equipment/aircraft storage areas maintained?	135.425(b), 145.103(a)(2)(iii), Procedures Manual
	m. Do work areas conflict with each other (space, dust, noise, etc.)	135.425(b), 145.103(a)(2)(ii), Procedures Manual

	n. Is there satisfactory lighting and ventilation?	135.425(b), 145.103(a)(2)(v) Procedures Manual
	o. Are safety procedures in place and adhered to?	145.109(c) Procedures Manual
	p. Is hangar ground support equipment serviceable and appropriate for the work being performed?	135.425(b), 145.103(a)(1), Procedures Manual
	Special Tools and Test Equipment	8300.10, 3-97, 8300.10, 3-131
	Are all required items serviceable and traceable to one of the following standards: a. National Institute of Standards and Technology (NIST) b. Standard established by the manufacturer	43.13, 145.109(b), 145.211(c)(1)(viii)
	Appropriate type and quantity are available per: a. Procedures Manual b. Manufacturer's Manual requirements	43.13, 145.109(a),(b),(c)
	Is proper protection and storage available and used	135.425(b)
	Support Shops (If Applicable) (Avionics, Engine, Accessory, etc.)	8300.10, 3-97, 8300.10, 3-131
	Are facilities adequate for the work being performed?	135.425(b), 145.103(a)(1)(2), 145.109(a),(b),(c)
	All required technical data is current and available: a. Engine Maintenance Manuals b. Accessory/Component Maintenance Manuals	43.13(a), 91.403(c), 135.421, 145.109(d), 145.211(c)(1)(v)
	If on microfiche readers are used, are enough readers available/serviceable?	135.425(b), 145.103(a)(1), 145.109(a)
	If electronic versions are used, are enough computers available/serviceable ?	135.425(b), 145.103(a)(1), 145.109(a)
	Is there sufficient staffing for the work being performed?	135.423(a)(b)(c), 135.425(b), 135.429(b), 145.151, 145.153, 145.157
	Are personnel properly trained, qualified and authorized?	43.3, 43.7, 43.13, 65.81, 91.403(c), 135.429(b), 145.151, 145.155, 145.157, 145.163, 145.211(c)(1)(iv), Procedures Manual
	Are shift turnover procedures in place and utilized?	145.211(c)(vii), 145.213, Procedures Manual
	Are Maintenance and Inspection functions accomplished in accordance with the Operator's Procedures Manual?	Procedures Manual
	Are receiving inspections accomplished IAW Procedures Manual?	145.211(c)(ii), Procedures Manual
	Are shelf-life limits established for items, and are these items are controlled?	43.10, 135.425(b), Procedures Manual

	Are components and hardware properly identified, protected and tagged as to serviceability?	Procedures Manual
	Are serviceable and unserviceable components segregated?	43.10, 145.103(a)(2)(ii), Procedures Manual
	Are hazardous materials segregated and properly stored?	135.425(b), 145.103(a)(2)(iv), Procedures Manual
	Is safety equipment available and serviceable?	145.103(a)(1), 145.109(a), (c), Procedures Manual
	Are equipment storage areas maintained?	135.425(b), 145.103(a)(2(iii), Procedures Manual
	Do work areas conflict with each other (space, duct, noise, etc.)?	135.425(b), 145.103(a)92)(ii), Procedures Manual
	Is there satisfactory lighting and ventilation?	135.425(b), 145.103(a)(2)(v) Procedures Manual
	Is general housekeeping maintained?	Procedures Manual
	Are safety procedures in place and adhered to?	145.109(c) Procedures Manual
	Is support equipment serviceable and appropriate for work being performed?	135.425(b), 145.103(a)(1), Procedures Manual
	Contractual Arrangements (If Applicable)	
	Does the operator contract maintenance? If so: a. Is the contractor's facility adequate for the work being performed? b. Does the contractor have current copies of the operator's maintenance manuals, inspection procedures and instructions? c. Are technical documents current and applicable to the equipment being operated? d. Is the contractor appropriately certificated for the work being done?	135 Ops Specs, D77, D78, D79, 145.217
	Does the operator have a program to determine that: a. Competent personnel and facilities are provided. b. Each aircraft returned to service is airworthy and there is supporting documentation to support airworthiness release.	145.217
	B. CONTRACT COMPLIANCE INSPECTION	
	Aircraft General	
	Does the aircraft meet all the requirements of its Type Certificate?	Part 21, TCDS, Contract
	Is the tank system approved under an STC and/or by the Interagency Airtanker Board?	Contract
	Are modifications or alterations which affect the aircraft performance, flight characteristics or operational limitations approved by the Interagency Airtanker Board?	Contract
	Has the aircraft been actually weighed in the last 24 months?	Contract

	Contract Specifications	
	Does the aircraft meet the requirements of Section B? a. Performance Specification b. Bid Weight c. Special Equipment (i.e. Rappel, buckets, baskets, etc.) d. Mechanic coverage e. Fuel Truck	Contract
	Does the aircraft meet the requirements of Section C? a. Operating Certifications b. Aircraft Requirements (FAR requirements, condition of equipment, etc.) c. Aircraft maintenance requirements d. Equipment requirements e. Aircraft security requirements f. Avionics equipment g. Personnel requirements	Contract
	Does the aircraft meet the Special requirements and equipment identified in the Exhibits (when required)? a. First Aid/Survival Kit b. Restraint Systems c. High visibility markings d. Additional avionics equipment e. Fuel Servicing Equipment	Contract
	Is a copy of the Contract on board the aircraft?	Contract
	FAA Operating Authority	
	Is the Operator/Aircraft authorized under FAR Part 133?	133.11, Contract
	Is the FAR Part 133 Certificate current?	133.13
	Is the Operator/Aircraft authorized under FAR Part 135?	119.1, 135.1, Contract
	Is the Operator/Aircraft authorized under FAR Part 137?	137.11, Contract
	Is a Rotorcraft-Load Combination Flight Manual in the aircraft?	133.47
	Are copies of these certificates in the aircraft?	133.27, 137.33, Contract
	Is a copy of the FAA Operations Specification on board the aircraft?	135.21, Contract
	Is a copy of the Company's Operations Manual on board the aircraft	135.21, Contract
	Aircraft Records	8300.10, 3-27, 8300.10, 3-41
	Is there a list of all Airworthiness Directives and their current status?	91.417(a)(2)(v), Contract
	Is there a list of all Manufacturers Mandatory Service Bulletins?	Contract
	Is there a list of all items with inspection requirements, and their due dates?	91.417(a)(2)(iv), Contract
	Is there a list of all items with time-calendar life retirement/overhaul requirements and their due dates?	91.417(a)(2)(ii), 91.417(a)(2)(iii), Contract

	Aircraft Inspection	8300.10, 2-36
	FOR A THOROUGH AIRCRAFT INSPECTION CHECKLIST SEE PAGE 12-13	
	Special Equipment	
	Inspect and review documentation for a Rappel Anchor	STC, ICA, etc.
	Inspect and review documentation for a Bambi Bucket	Bambi Bucket Manual
	Inspect and review documentation for a Long Line	
	Inspect and review documentation for a Remote Hook	ICA
	Inspect the 3-pin plug for correct polarity and operation	
	Inspect the 9-pin plug for correct polarity and operation	
	Miscellaneous	
	Verify mechanic qualification against a contract	
	Perform an inspection of a Fuel Service Vehicle	
	C. AIRCRAFT INSPECTIONS WHILE ON CONTRACT	
	Aircraft General	
	Does the aircraft meet all the requirements of its Type Certificate?	Part 21, TCDS Contract
	Is the tank system approved under an STC and by the Interagency Airtanker Board?	Contract
	Are modifications or alterations which affect the aircraft performance, flight characteristics or operational limitations approved by the Interagency Airtanker Board?	Contract
	Has the aircraft been actually weighed in the last 24 months?	Contract
	Aircraft Ramp Inspection	8300.10, 3-3
	Is required documentation on board the aircraft? a. Airworthiness Certificate	91.203(a)(1)
	b. Aircraft Registration	91.203(a)(2)
	NOTE: Neither certificate is required to be on board Part 137 aircraft	137.33(a)
	c. Daily Maintenance Log	Contract
	If a Temporary Certificate, is it current?	91.203(a)(2), 47.31(b)
	For Part 133 & 137 aircraft, is a copy of the Operating Certificate on board?	133.27(b), 137.33(b)
	Is the Aircraft Flight Manual on the aircraft if required by FAR 91.9	91.9
	Is a Rotorcraft-Load Combination Flight Manual in the aircraft	133.47
	Are the maintenance manuals, or appropriate parts of manuals, required by the operator's Procedures Manual available?	Contract
	Are mechanical discrepancies entered in the maintenance log either corrected or deferred using approved methods?	91.213
	Where any mechanical discrepancies noted during a visual inspection of the exterior and interior of the aircraft?	Contract
	For Part 135 aircraft are Certificate Numbers displayed and readable from outside the aircraft?	119.9

	FOR A THOROUGH AIRCRAFT INSPECTION CHECKLIST SEE PAGE 12-13	
	Aircraft Spot Inspection of In-Progress Work	8300.10, 3-2
	Is the aircraft properly certificated and registered?	91.203
	Are maintenance personnel using the approved procedures for the maintenance being performed? Latest manual revision and date	43.13
	Are maintenance personnel appropriately certificated for the maintenance being performed?	43.3
	Are the required special tools and test equipment available and within calibration due date?	43.13(a)
	Are inspection personnel properly trained, qualified and authorized?	43.13
	Are the maintenance facilities and equipment adequate for the maintenance being performed?	43.13

Interior Inspection Guidelines

ITEM	8300.10, 2-36
EXAMINE AIRWORTHINESS AND REGISTRATION CERTIFICATES TO ENSURE THE FOLLOWING:	
• Airworthiness and Registration certificates are current and valid	
• Both certificates contain the same model, serial number, and registration markings	
• (If temporary registration, is it current)	
• Signatures are in permanent ink	
NOTE: Copies are only authorized on Part 137 aircraft	
Flight Deck Inspection. Inspect the following:	
• Aircraft Logbook for a journey record section and maintenance record section	
• Instrument security and range markings	
• Windshields/windows for delamination, scratches, crazing, and general visibility	
• Seat belts and shoulder harnesses (TSO markings, metal to metal latching and general condition)	
⊙ **Emergency equipment.** All equipment requiring periodic inspections should have an inspection date marked on it. Inspect the following:	
• First aid kit	
• Survival Kit	
• Emergency oxygen bottles and masks (proper pressure, security and conditions	
• Fire extinguishers (security, pressure, seal, and type)	
• Placement of all "Emergency Exit" signs	
• Presence and legibility of "Emergency Exit" operating instructions	
• Location of all emergency equipment identified by placards	
• Emergency Escape Ropes	

Exterior Inspection Guidelines

ITEM	
⊙ Have a crewmember available during the exterior inspection, if possible, and inspect the following items, as applicable.	
⊙ **Landing gear and wheel well areas.** Check for the following:	
• Any indication of wear, chaffing lines, chaffing wires, cracks, dents, or other damage	
• Structural integrity of gear doors (cracks, dents, or other damage)	
• Hydraulic leaks (gear struts, actuators, steering valves, etc.)	
• Tire condition and pressure (if pressure indicators installed)	
• Wheel installation and safety locking devices	
• Wear, line security, leaks, and installation of brakes	
• Corrosion	
⊙ **Fuselage and Pylons.** Inspect the following:	
• Structure for cracks, corrosion, dents, or other damage	
• Fasteners (loose, improper, missing)	
• Condition of radome	
• Condition of pitot tubes	
• Static ports (cleanliness and free from obstructions)	
• Stall warning devices and other sensors	
• Antennas (security, and indication of corrosion)	
• Stains of other indications of leaks	
• Cargo compartments for integrity of fire protective liners (no holes, or duct tape used for repairs) Blow-out panels not taped closed	
• Emergency exit identification/marking (Two inch contrasting borders out lining exits)	
• Registration markings (match airworthiness and registration certificates)	
• All lights (general condition, broken lenses, etc.)	
⊙ **Wings and Pylons.** Inspect the following:	
• Structure for cracks, corrosion, dents or other damage	
• Leading edge (dents and/or damage in line with engine inlets)	
• Leading edge devices (when open for actuator leaks, general condition of line, wires, and plumbing)	
• Evidence of fuel leaks (if found, maintenance must prove leak is within limits)	
• All lights (general condition, broken lenses, etc.)	
• Flaps (cracks, corrosion, dents, and delamination)	
• Flap wells (general condition of lines, wires, and plumbing)	
• Static eliminators (number missing in accordance with MEL/CDL)	
• Ailerons and aileron tabs (cracks, corrosion, dents, delamination)	
• Missing, loose, or improperly secured access door/inspection panels and blow-out panels	
⊙ **Engines.** Inspect the following:	
• Intakes for fan blade damage and oil leaks	
• Ring cowl for security and proper fit	
• Cowling doors for security and proper fit	
• Lower cowling for security and evidence of fluid leaks	
• Exhaust for turbine and tailpipe damage and evidence of fluids	
• Reverser doors for stowage and security, evidence of leaks	
• Access doors for security	

⊙ **Propellers.** Inspect the following:	
• Leading edge of propeller for cracks, dents, and other damage	
• De-Icer boots for signs of deterioration and security	
• Spinners for security, cracks, and evidence of fluid leaks	
⊙ **Empennage.** Inspect the following:	
• Leading edge for dents	
• All lights (general condition, broken lenses, etc.)	
• Missing static discharge eliminators (in accordance with MEL/CDL)	
• Elevators, rudders, and tabs (cracks, corrosion, dents delamination)	
• Evidence of elevator and rudder power units for hydraulic leaks	
⊙ **Cargo/Baggage.**	
• Baggage restraining system (in-place and proper use)	
• Load distribution in accordance with weight placard instructions	
⊙ **Refueling Procedures.**	
• Positioning of ground support equipment (GSE)	
• Fuelling of aircraft to include the following:	
→ Refueling pressure	
→ Condition of refueling units (leaks, filter change dates, exhaust system, etc.)	
→ Ground connections and procedures	
→ Fire protection	
→ General fuelling procedures	
⊙ **Hazardous Material.**	
• Determine crew knowledge of the following:	
• Location and labeling of hazardous material	
• Special requirements if any	
• HAZMAT Booklet and current Exemption Letter	

NOTES

Appendix 1

Helicopter Fire-Fighting Equipment

I. Introduction. Inspectors encounter quite a bit of equipment that is used exclusively for fire fighting. Depending on the inspectors background some of it may be familiar. This appendix will provide some general information on some of the more common pieces of equipment used in helicopters. Much of the special fire-fighting equipment covered in this chapter is used under the authority of FAR Part 133 – External Load Operations. Definitions of the various classes of external load operations can be found in Appendix 6, Definition, Abbreviations, Acronyms and Terms.

Note: Information shown in this section is <u>for Reference Only</u>.

II. Helicopter Fixed Tanks

1. Bell 205/212 (Isolair)

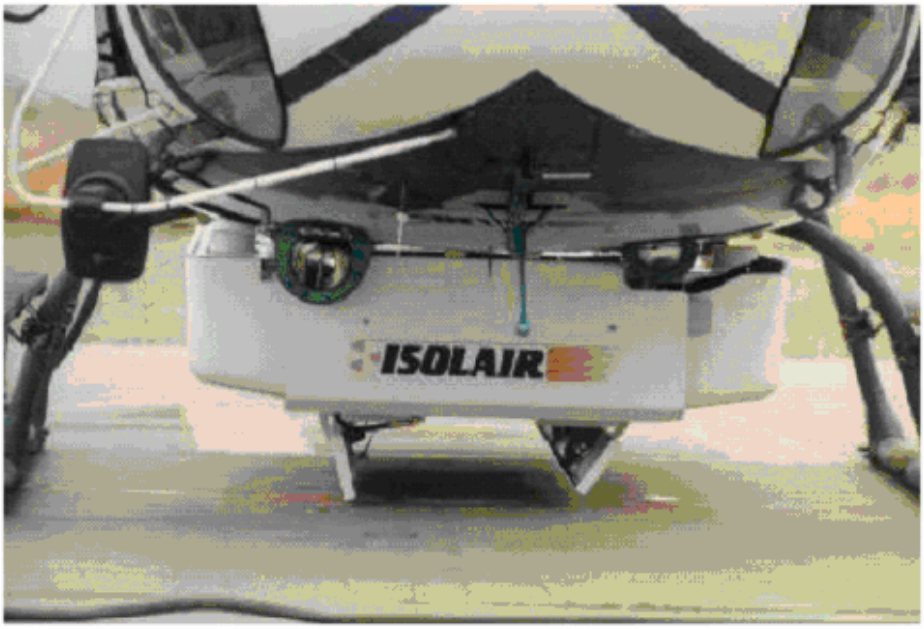
Eliminator II for Bell 205A-1, 212, 412 and 412EP

4600–205

Height	14 inches
Width	88 inches
Length	90 inches
Net Weight	418 lbs
Gross Weight	3342 lbs
Capacity	323 U.S. Gallons
Fill Rate	270 gpm
Fill Time	55 to 75 seconds

4600–212

2. Eurocopter AS350 B (Isolair)
Eliminator II model 4600-350B2 for AS350 B1, B2, B3



Height	13 inches
Width	52 inches
Length	96 inches
Net Weight	330 lbs
Gross Weight	2537 lbs
Capacity	250 U.S. Gallons
Fill Rate	270 gpm
Fill Time	25 to 35 seconds

3. Bell 205/212 with High Skid Gear (Simplex)

Net Weight	360 lbs
Gross Weight	3487 lbs
Capacity	375 U.S. Gallons
Fill Rate	320 gpm

RADS III Firehawk™ for the S-70A/UH-60L Blackhawk Helicopter
Retardant Aerial Delivery System III

The Newests RADS Creates a Multi-Mission Helicopter
At the request of Sikorsky Aircraft, Aero Union designed and manufactured a 1,000 gallon water tank for the S-70A/UH-60L (Blackhawk) Helicopter. This Aero Union RADS III/Helitack tank comes equipped with a 30 gallon foam tank, a 1000 gallon per minute snorkel, and Aero Union's patented computer-controlled doors.

The FIREHAWK™ can pick up 15 firefighters, deliver them close to the fire, and then commence dropping water/foam on the fire.

Using the snorkel hose, the tank can be filled in approximately 60 seconds from a variety of water sources.

Aero Union now offers the FIREHAWK™ conversion:

A Kit: fixed provisions

- Water tank fuselage attachment lugs
- Wiring associated with cockpit control panel and civilian radios
- Landing gear extension fitting

B Kit: removable provisions

- Water tank (1,000 gallons/3,785 liters)
- Water pump-snorkel (1,000 gallons/3,785 liters per minute)
- Extended landing gear
- Cockpit control panel
- Civilian radios
- Pilot lower rearview mirror

Four hours required for installation or removal of water tank (estimated).

S-64 Skycrane Heli-Tanker

ASDG completed delivery of this STC modified S-64 helicopter to Evergreen early on in the 2001 fire season. Since initial operation, this Skycrane Heli-tanker has proven to be quite an effective fire fighting platform. The snorkel system rapidly fills the 2,000 gallon tank in well under 1 minute, even from the shallowest of reservoirs, while the foam injection system allows for various concentration levels to suit any given scenario. This Heli-tanker also comes equipped with the Aero Union patented constant flow tank door actuation design providing the standard of excellence for coverage level and drop control.

III. Bambi Buckets

SEI Industries

References:

Bambi Bucket Repair Assessment Manual
Bambi Bucket Operator's Manual

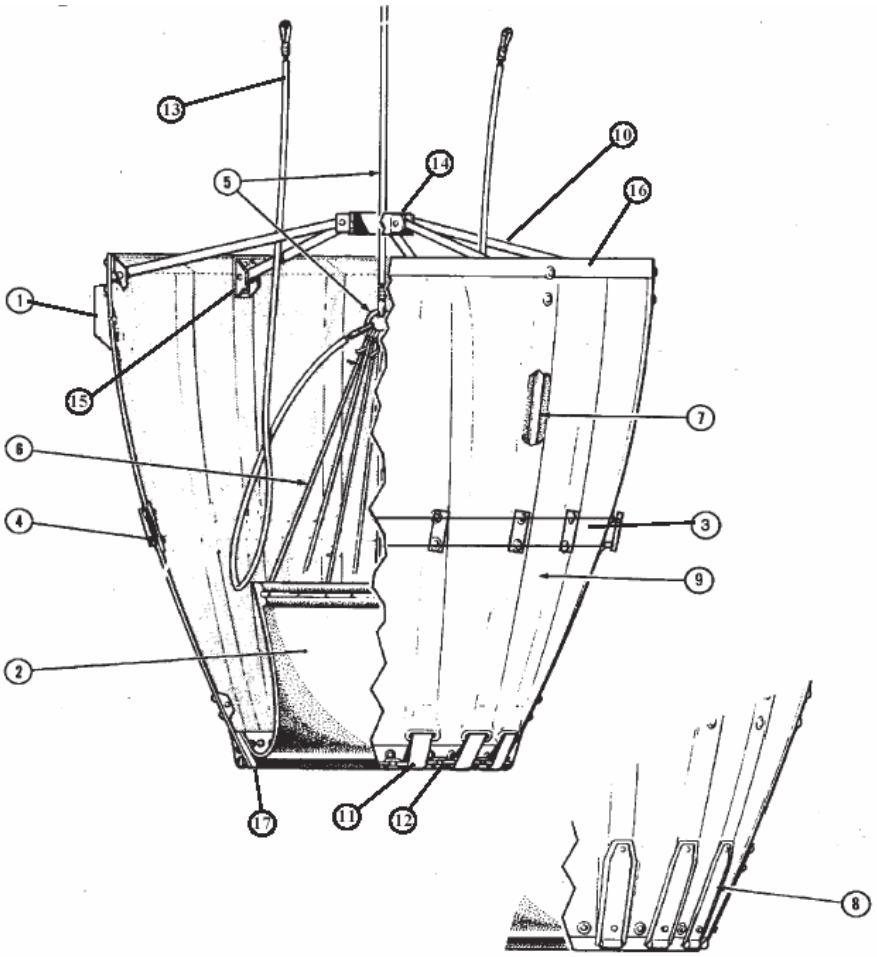


Diagram #	Description	Diagram #	Description
1	Ballast Plates	9	Bambi Bucket Shell
2	Dump Valve	10	IDS Hub Spokes
3	Cinch Strap	12	Bottom Chain
4	Cinch Strap Bar	11	Bottom Webbing Loops
5	Riser Cable and Riser Ring	13	Valve Restrainer Cable
6	Purse String Set	14	IDS Hub
7	Side Battens	15	IDS Brackets
8	Bottom Webbing Loop Wear Strip	16	Top Webbing
		17	Bottom Webbing

The Riser cable (5) is attached to the Control Head (Not Shown), which is attached to the aircraft Cargo Hook, and electrically to the 9-pin plug. By depressing a switch on the collective the pilot actuates a solenoid in the Control Head, which releases the riser cable (5), allowing the water in the bucket to be dumped.

Bambi Buckets (Cont.)

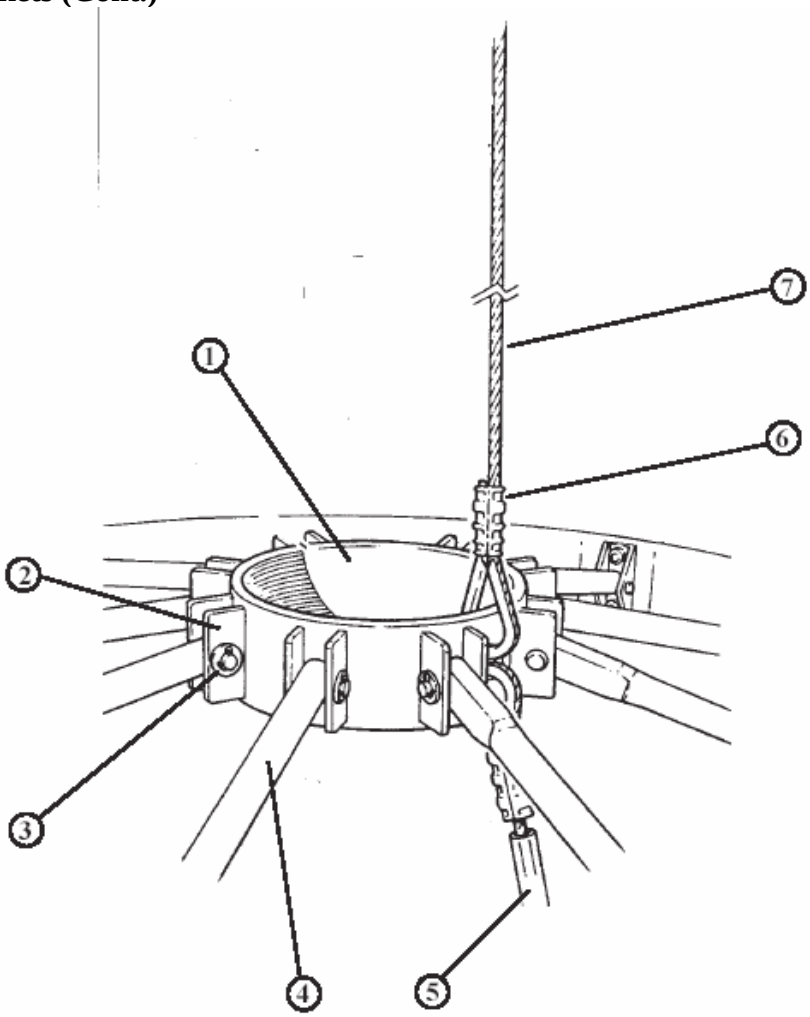


Diagram #	Description	Diagram #	Description
1	IDS Hub	5	IDS Hub Restrainer
2	IDS Hub Bracket	6	Swage Block
3	Clevis Pin	7	Deployment cable
4	IDS Spokes		

Torrentual Valve – Allows partial release of water

Powerfill I – Bucket with Torrentula Valve

Powerfill II – Smaller Buckets

Bambi Buckets (Cont.)

Model	Capacity			Gross Weight		Empty Weight	
	Imp. Gal	US Gal	Litres	Lbs	Kg	Lbs	Kg
6072	60	72	270	666	303	66	30
8096	80	96	365	870	395	70	32
9011	90	108	410	971	441	70	32
1012	100	120	455	1072	487	72	33
1214	120	144	545	1273	579	73	33
1518	150	180	680	1574	797	75	34
1821	175	210	795	1876	853	76	35
2024	200	240	910	2135	970	135	61
2732	270	324	1225	2853	1300	154	70
3542	350	420	1590	3667	1667	167	76
4453	440	530	2000	4587	2085	170	85
5566HD	550	660	2500	5805	2638	304	138
5870HD	585	700	2655	6170	2805	330	150
6578HD	650	780	2955	6846	3111	356	162
7590	750	900	3405	7775	3534	375	170
HL5000	1100	1320	5000	11390	5177	390	177
HL7600	1667	2000	7570	17115	7780	465	211
HL9800	2167	2600	9840	22180	10081	530	241

The capacity of most Bambi Buckets is easily determined from its model number. The first two digits equate to the first two digits of the capacity in Imperial Gallons, and the second two digits equal the capacity in U.S. Gallons, as in the example below for a Model 6072 bucket. If over 99 gallons the first two digits of the capacity are shown as in the example for a Model 1214 Bucket.

Model # 6072

XX : XX
Imperial : U.S.
Gallons : Gallons
60 : 72

Model # 1214

XX : XX
120 Imp. Gals : 144 U.S. Gals
12 : 14

Bambi Buckets (Cont.)

The following are considered Category 1 defects that affect safety. If any of these occur, operations should be terminated until repairs are accomplished. **Check the Bambi Bucket Repair Assessment Manual for current guidance.**

SHELL
- 1 or more broken Top Loop knots (M-Strap attachment point to the shell)
- Gross punctures through shell that cut or severely damage one or more Panel Strips
- Separation of fabric welds longer than 3”
- Punctures or cuts through shell longer than 3”
- 2 or more broken Bottom Webbing Loops

SHELL CINCH STRAP
- Broken or missing Cinch Strap
- Field modified Cinch Strap (i.e. Knots)
- Broken or missing Cinch Strap retaining brackets
- Broken or missing Cinch Strap hook or mating ring

BUCKET CABLES
- 1 or more broken Suspension Cables or end fittings
- Broken Riser Cable
- Broken Deployment Cable

BUCKET VALVE
- Broken Valve Restrainer Cable
- 5 or more broken purse strings

IDS HUB
- Cracks or breaks across the major section of the IDS Hub
- 2 or more broken or cracked Spoke Brackets
- 2 or more broken or missing Spokes, Clevis Pins, Shell Brackets
- 3 or more bent spokes (in excess of 20 degrees = Broken)

M-STRAPS & TOP CHAINS
- Broken Top Chains
- Broken or missing Shackles
- 2 or more broken M-Straps

CONTROL HEAD
- Any visible crack or break on the base plate
- Visibly bent shackles or suspension line bolts
- Broken or missing safety wire on shackle pins
- Missing, broken, or loose valve release mechanism parts
- Broken or exposed electrical conductors
- Broken or missing break-away plug
- Broken or cracked shackle yoke

GENERAL
- 6” inch clearance from tail rotor **(OR 50ft or greater longline)**
- Excessive Gross Bucket Weight

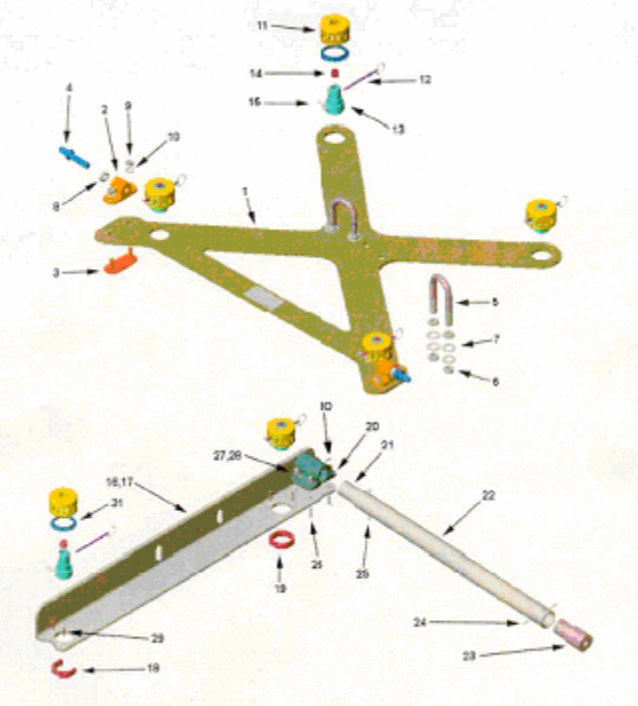
NOTE: When inspecting a bucket, it should be laid out full length to verify that when attached to the belly hook that there is at least 6 inches of clearance from the tail rotor.

During a pre-use inspection verify that the Model number on the Control Head, matches the Model number on the Bucket. A bucket larger than what the Control Head is rated for could cause the Control Head to fail.

IV. Rappel Anchors. Rappel Anchors are required to be inspected periodically. Review the anchor's Instructions for Continued Airworthiness (ICA) to determine the type and frequency of inspections. A CD is available from the Missoula Technology & Development Center with all the approved rappel anchor's Supplemental Type Certificates (STC), Flight Manual Supplements, and ICA's. **See page Appendix 1-12 for complete list of approved Rappel Anchors**

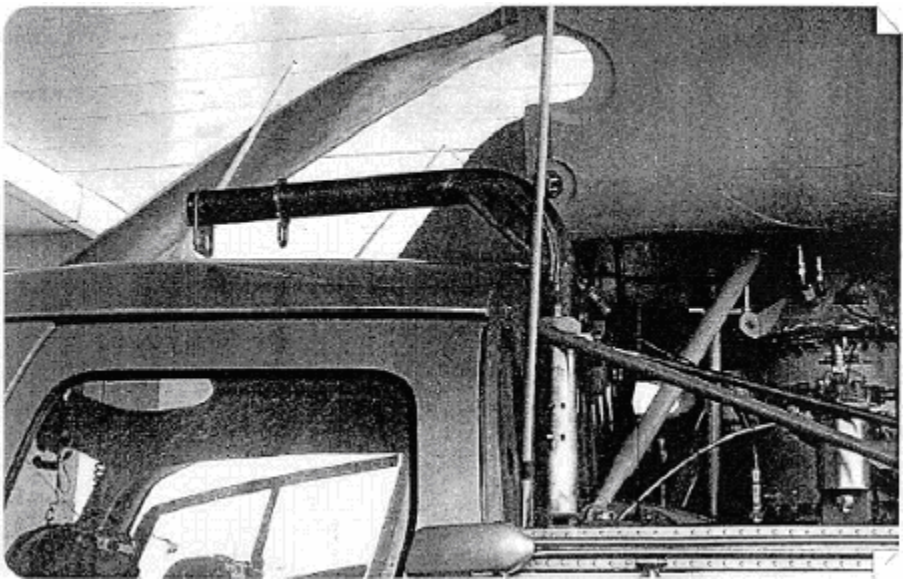
STC SH261WE

Bell 205, 212, 214



Bell 205, 212, 214

STC SR00122LA-D Eurocopter AS 350



AS 350

INTERAGENCY APPROVED ANCHORS

STC SH4547NM **Floor Anchor** **STC Holder**
Bell 206 B, L USDA Forest Service
Annual Inspection Required
Magnetic Particle Inspection (Required prior to start of first season of new contract)

STC SH2293SO **Overhead Anchor** **STC Holder**
Bell 206 B, L Aeronautical Accessories
Carabiner (099-150-001/002) **100 Hour Inspection Required**
Cargo Let Down ONLY

STC SR01336AT **Overhead Anchor** **STC Holder**
Bell 407 Aeronautical Accessories
Carabiner (099-150-001/002) **100 Hour Inspection Required**
Klehersteis steel P/N 605172

STC SH261WE **Overhead Anchor** **STC Holder**
Bell 212 USDA Forest Service
100 Hour Inspection Required
Bell 205A++ (with FAA Field Approval)
Requires NAS 1211B or equivalent for Spotter Tether
If A/C has had a Rescue Hoist installed, it will need longer bolts on ring and stud than .625

STC SR00125LA-D **Floor Anchor** **STC Holder**
AS 350 Heli-Support
100 Hour Inspection Required

STC SR00125LA-D **Overhead Anchor** **STC Holder**
AS 350 Heli-Support
100 Hour Inspection Required

V. Remote Cargo Hooks. A remote cargo hook is an electrically operated cargo hook attached to the aircraft with a longline, and is controlled from the pilot's position. The upper end of the longline is attached to the aircraft cargo hook.

The following is an excerpt from Exhibit 5 of the 2005 - 2007 National Type I & II CWN Helicopter Contract regarding Remote Cargo Hooks:

2. Remote Cargo Hook

   a. As a minimum, the remote cargo hook shall be completely disassembled and inspected with repairs made as required; lubricated and perform a full-load operational check every 24 calendar months.

   b. All work shall be done in accordance with manufacturer's maintenance manuals, as applicable.

1. Onboard Hooks

Part Number	200-246-00
Description	Bell 204, 205, 212 & 412 Cargo Hook kit - TALON MC Keeperless
Certification	FAA STC: SR00699SE Transport Canada STC: SH99-217
Price	$4,395

The following items are included with each 200-246-00 cargo hook kit.

Part Number	Description	Quantity
528-020-02	TALON MC Keeperless Cargo Hook	1
220-040-00	Bumper Ring	1
510-314-00	Cap Screw	2
290-210-01	Spacer	4
510-104-00	Nut	2
120-083-00	Owner's Manual	1

Specifications

Design Load	6,000 LB (2,721 KG)
Design Ultimate Strength	27, 000 LB (12, 247 KG)
Electrical Release Capacity	15,000 LB (6,804 KG)
Mechanical Release Capacity	15,000 LB (6,804 KG)
Force Required for Mechanical Release at 6,000 LB	18 LB Max. (.400” travel)
Electrical Requirements	22-28 VDC, 9 amps
Minimum Release Load	0 LB
Unit Weight	11.75 LB (5.33 KG)
Mating Electrical Connector	MS3106F16S-5S

2. Breeze Eastern Hooks

	HELICOPTERS				EXTERNAL CARGO HOOKS		
	MODEL	EMPTY WEIGHT	MAX T/O WEIGHT	USEFUL LOAD	MODEL	PART NUMBER	LOAD CAPACITY
	Agusta A109 Max	3,506 lb (1,590 kg)	5,997 lb (1,590 kg)	2,491 lb (1,130 kg)	2A20B	17149-2	2,000 lb (907 kg)
	Agusta A109 Power	3,461 lb (1,570 kg)	6,284 lb (2,850 kg)	2,822 lb (1,280 kg)	CHS-3000	CHS-3000-2 CHS-3000-4	3,500 lb (1,590 kg)
	Agusta A109C	3,506 lb (1,590 kg)	5,997 lb (2,720 kg)	2,491 lb (1,130 kg)	2A20B	17149-2	2,000 lb (907 kg)
	Agusta A109K2	3,669 lb (1,650 kg)	6,284 lb (2,850 kg)	2,645 lb (1,200 kg)	CHS-3000	CHS-3000-2 CHS-3000-4	3,500 lb (1,590 kg)
	Agusta A119 Koala	3,130 lb (1,420 kg)	5,732 lb (2,600 kg)	2,822 lb (1,200 kg)	CHS-3000	CHS-3000-2 CHS-3000-4	3,500 lb (1,590 kg)

HELICOPTERS					EXTERNAL CARGO HOOKS		
	MODEL	EMPTY WEIGHT	MAX T/O WEIGHT	USEFUL LOAD	MODEL	PART NUMBER	LOAD CAPACITY
	Bell 206 Blll JetRanger	1,678 lb (761 kg)	3,200 lb (1,451 kg)	1,522 lb (690 kg)	2A15E	SP-4232-5	1,500 lb (681 kg)
	Bell 206 L4 LongRanger	2,307 lb (1,046 kg)	4,450 lb (2,018 kg)	2,143 lb (972 kg)	2A20B	17149-2 17149-2L	2,000 lb (907 kg)
	Bell 206 LT TwinRanger	2,913 lb (1,321 kg)	4,550 lb (2,018 kg)	1,637 lb (742 kg)	2A20B	17149-2 17149-2L	2,000 lb (907 kg)
	Bell 204/205	5,210 lb (2,363 kg)	9,500 lb (4,309 kg)	5,050 lb (2,290 kg)	A60LT	SP-7109-31 SP-7109-41	6,000 lb (2,727 kg)
	Bell 212	6,176 lb (2,801 kg)	11,200 lb (5,080 kg)	5,024 lb (2,279 kg)	A60LT	SP-7109-12 SP-7109-62	6,000 lb (2,727 kg)
	Bell 412	6,789 lb (3,079 kg)	11,900 lb (5,398 kg)	5,111 lb (2,318 kg)	A60LT	SP-7109-12 SP-7109-62	6,000 lb (2,727 kg)
	Bell 407	2,598 lb (1,178 kg)	5,000 lb (2,267 kg)	2,402 lb (1,090 kg)	2A20B3	17149-6	3,000 lb (1,362 kg)
	Bell 427	3,485 lb (2,722 kg)	6,000 lb (2,722 kg)	2,515 lb (1,141 kg)	2A20B3	17149-6	3,000 lb (1,362 kg)
	Bell 430	5,285 lb (2,397 kg)	9,000 lb (4,082 kg)	3,715 lb (1,685 kg)	C50	17172-1 17172-2	5,000 lb (2,273 kg)
	Bell Boeing V22	32,628 lb (14,800 kg)	47,500 lb (21,545 kg)	15,000 lb (6,804 kg)	CH-10000 (Two)	CH-10000-5	10,000 lb (4,545 kg)
	Boeing CH-47D	23,402 lb (10,615 kg)	50,000 lb (22,679 kg)	22,998 lb (10,341 kg)	C-160 (Two)	17169-4 17165-5	16,000 lb (7,270 kg)
	Boeing MD 500E	1,481 lb (672 kg)	3,000 lb (1,361 kg)	1,519 lb (689 kg)	2A20B	17149-4 (17158-2)	2,000 lb (907 kg)
	Boeing MD 520N	1,586 lb (719 kg)	3,350 lb (1,519 kg)	1,764 lb (800 kg)	2A20B	17149-4 (17158-2)	2,000 lb (907 kg)
	Boeing MD 530F	1,509 lb (684 kg)	3,100 lb (1,406 kg)	1,591 lb (722 kg)	2A20B	17149-4 (17158-2)	2,000 lb (907 kg)
	Boeing MD 600N	1,930 lb (875 kg)	4,100 lb (1,406 kg)	2,120 lb (961 kg)	2A20B3	17149-6 (17158-4)	3,000 lb (1,362 kg)
	Boeing MD 902	3,275 lb (1,486 kg)	6,250 lb (2,835 kg)	2,975 lb (1,349 kg)	CHS-3000	CHS-3000	3,500 lb (1,590 kg)
	EH Industries EH 101	19,048 lb (8,640 kg)	32,118 lb (14,600 kg)	13,140 lb (5,960 kg)	C-160	17169-4 17169-5	16,000 lb (7,270 kg)
	Enstrom 480	1,675 lb (760 kg)	2,850 lb (1,293 kg)	1,175 lb (533 kg)	2A15E	SP-4232-5	1,500 lb (681 kg)
	Enstrom F 280 FX	1,585 lb (719 kg)	2,600 lb (1,179 kg)	1,015 lb (460 kg)	2A15E	SP-4232-5	1,500 lb (681 kg)
	Enstrom F28F Falcon	1,570 lb (712 kg)	2,600 lb (1,179 kg)	1,500 lb (681 kg)	2A15E	SP-4232-5	1,030 lb (467 kg)

	HELICOPTERS				EXTERNAL CARGO HOOKS		
	MODEL	WEIGHT	MAX T/O WEIGHT	USEFUL LOAD	MODEL	PART NUMBER	LOAD CAPACITY
	Eurocopter AS 332	10,330 lb (4,686 kg)	20,500 lb (9,300 kg)	10,173 lb (4,614 kg)	CH-10000	CH-10000	10,000 lb (4,545 kg)
	Eurocopter AS 350 B2	2,561 lb (1,162 kg)	4,960 lb (2,250 kg)	2,372 lb (1,076 kg)	A25LT	14027-7	2,500 lb (1,134 kg)
	Eurocopter AS 350 BA	2,566 lb (1,164 kg)	4,980 lb (2,250 kg)	2,084 lb (936 kg)	2A20B	17149-1	2,000 lb (907 kg)
	Eurocopter BO 105	2,813 lb (1,276 kg)	5,511 lb (2,500 kg)	2,813 lb (1,224 kg)	A25LT	14027-6 (14513-1)	2,500 lb (1,134 kg)
	Kaman SH-2	7,680 lb (3,483 kg)	13,900 lb (6,305 kg)	5,070 lb (2,299 kg)	K40	SP-4380-1	4,000 lb (1,818 kg)
	Kamov Ka 32A	14,990 lb (6,800 kg)	24,250 lb (11,000 kg)	11,000 lb (5,000 kg)on hook	CH-10000	CH-10000-1	10,000 lb (4,545 kg)
	Mil Mi-8T	15,382 lb (6,968 kg)	26,455 lb (12,000 kg)	11,108 lb (5,032 kg)	CH-10000	CH-10000	10,000 lb (4,545 kg)
	Robinson R-44	1,400 lb (636 kg)	2,400 lb (1,090 kg)	1,000 lb (454 kg)	2A20B	17149-3	1,000 lb (454 kg)
	Schweizer 330SP	1,140 lb (517 kg)	2,260 lb (1,025 kg)	1,120 lb (508 kg)	2A20B	17149-3	1,000 lb (454 kg)
	Sikorsky H-53	33,226 lb (15,071 kg)	73,500 lb (33,339 kg)	36,000 lb (16,330 kg)	C250B	17041-3	25,000 lb (11,300 kg)
	Sikorsky H-53	33,226 lb (15,071 kg)	73,500 lb (33,339 kg)	36,000 lb (16,330 kg)	CS-360	17087-6	36,000 lb (16,300 kg)
	Sikorsky H-60/S-70	11,516 lb (5,224 kg)	17,422 lb (7,907 kg)	8,000 lb (3,629 kg)	CH-9000	FE 7590-173 FE 7590-146	9,000 lb (4,090 kg)
	Sikorsky S-61	15,429 lb (6,998 kg)	21,500 lb (9,752 kg)	8,000 lb (3,628 kg)	2A100	SP-7086-1	10,000 lb (4,545 kg)
	Sikorsky S-76	8,620 lb (3,909 kg)	11,700 lb (5,306 kg)	3,080 lb (1,395 kg)	B60LT	17075-1 17075-2	6,000 lb (2,727 kg)

3. SEI Industires Hooks

Model	Lift Capacity Load	Suggested Helicopter
2K-001	2000 lb/908 kg	Light aircraft applications: MD 500 series, Bell 206B, L1, L3, A-Star, Agusta 109
C45	4500 lb/2043 kg	Light to Medium applications: Bell 407/427, AS 355, Lama, MD Explorer, EC 135
6K-001 C60	6000 lb/2724 kg	Medium aplications: Bell 204, 205, 212, 412, Puma, Sikorsky S58T, Kaman K-MAX
10K-001	10,000 lb/4540 kg	Heavy lift applications: Super Puma, Sikorsky UH-60(Blackhawk), MI-8, MI-17, Bell 214
20K-001	20,000 lb/9080 kg	Heavy lift applications: Boeing Vertol CH46/47, Sikorsky S-64, CH-53, EH-101

MODEL		2K-001	C45	6K-001	C60	10K-001	20K-001
Lift Capacity	lb	2,000	4,500	6,000	6,000	10,000	20,000
	kg	908	2,043	2,724	2,724	4,540	9,080
Design Ultimate Strength	lb	7,500	22,500	30,000	30,000	50,000	100,000
	kg	3,405	10,206	13,620	13,620	22,700	45,400
Dropping Capacity	lb	1,500				8,500	14,000
	kg	681				3,859	6,356
Minimum Release Load	lb	8	15	15	15	15	15
	kg	3.6	6.8	6.8	6.8	6.8	6.8
Voltage	V.DC	24/28	24/28	24/28	24/28	24/28	24/28
Current	Amps	14	14	14	14	14	14
Weight	lb	5	15	16.5	16.5	32	90/65*
	kg	2.27	6.81	7.49	7.5	14.5	41/30
Height	inch	8.25	10.7	11.2	11.2	15	16
	cm	21.0	27.2	28.4	28.4	38.1	40.6
Width	inch	4.75	4.3	9.13	4.3	6.25	13
	cm	12.1	10.9	23.2	10.9	15.9	33.0

OAS-37
06/04

UNITED STATES DEPARTMENT OF THE INTERIOR
AVIATION MANAGEMENT

TECH BULLETIN

INSPECTION

July 13, 2004

NUMBER: 04-01

DISTRIBUTION: DOI Aviation Management Approved Inspectors

SUBJECT: Cargo Hook Inspection

During a routine pre-season inspection for an exclusive use helicopter contract, a cracked load beam was detected in a new remote hook assembly. The crack appears to be a manufacturing defect radiating from the pivot hole to the inside face of the load beam.

/S/ Allen P. Rice
Chief, Division of Technical Services

OAS-37
06/04

UNITED STATES DEPARTMENT OF THE INTERIOR
AVIATION MANAGEMENT

TECH BULLETIN

INSPECTION

July 16, 2004

NUMBER: 04-03

DISTRIBUTION: DOI Aviation Management Approved Inspectors

SUBJECT: Inadvertent Cargo Hook Releases and Cable Adjustment

A check of SAFECOM "hook releases" within the last 18 months (January 2003 to June 2004) revealed 90 occurrences involving numerous types of helicopters. Five SAFECOMs received in the last 45 days pertain to inadvertent hook releases with the AS350 helicopter.

A defined search of AS350, SA 316, and SA315 helicopters (all using a similar type suspension swing for the cargo hook) from May 7, 2004, to June 21, 2004, resulted in eight SAFECOMs.

The Eurocopter AS350 parts manual lists three different (aft) manual release cables all approved for the aircraft serial number. The manual doesn't list any use codes for different configurations.

Most AS350s were originally equipped with a Siren cargo hook, which has the release cable connected to the front of the hook and requires use of the shorter cable (p/n AS22-19). When installing a Breeze-Eastern or Onboard Systems hook, which has the release cable connected to the rear of the hook, the longer cable (p/n AS22-18 or 704A31-813-010) is required.

Research of the hook manufacturer's (Onboard Systems) data shows there are three different cargo hooks approved for the AS350 series helicopters. Each hook or hook kit has an owners manual, installation manual, and flight manual (FM) supplement as part of the supplemental type certificate (STC) approval.

The information contained in these manuals is very specific as to the rigging procedures, aft manual release cable part number usage, and inspection/testing for inadvertent hook release. The SA315 system and manuals are very similar.

Onboard Systems does not, at this time, have any approved hooks or provisions for the SA316 helicopter.

(continued)

Conclusions:

1. The owners and installation manuals are not being utilized for configuration and rigging procedures and, in some cases, are not available to mechanics in the field.

2. The flight manual supplements are not being inserted into the FM.

3. The correct length (p/n) manual release cables are not being installed.

4. Rigging dimensions for manual release cable to cargo hook internal connection are not being followed.

5. The most strain (tension) is placed on the manual release cable when the swing/hook assembly is in the most forward right-hand or left-hand position, and the aircraft is just starting a low speed right or left turn with the load on the hook.

6. A hook load of 200+ pounds will move the swing/hook farther forward left or right than can be duplicated by the hand on the ground.

Inspections: <u>All</u> Helicopters and Cargo Hooks

1. Verify that owners manuals, installation manuals, and flight manual supplements are with the aircraft and are appropriate to the equipment installed.

2. Perform normal visual and manual inspections.

3. Remove any bungee cords that interfere with full swing/hook or assembly movement in any direction. Determine which direction the hook assembly needs to travel to produce the greatest tension (pulling) on the manual release cable and electrical connector wires.

4. Move the hook assembly the maximum direction of cable tension. Any tension (pulling) or cable tightening of manual release cable or electrical wires indicates that the rigging is not correct.

5. Move the hook assembly to the extreme opposite direction and check for any binding or fouling of the manual release cable or electrical wires. Verify that the manual cable and electrical connectors are tight, cannot be loosened by hand, and are safetied if applicable.

6. Verify that the manual releases operate smoothly and easily and that they can be returned to the locked position without binding. The manual releases must have free travel (minimum ½"+) from locked to release positions. This check should be done in both extreme positions listed above.

/S/ Allen P. Rice
Chief, Division of Technical Services

VI. Longlines. A longline is any cable or lead line, 50 feet or longer, attached to the cargo hook of the aircraft for the purpose of carrying an external load.

The following is an excerpt from Exhibit 5 of the 2005 -2007 National Type I & II CWN Helicopter Contract regarding Longlines:

3. Long-lines (as applicable)

   a. Rotation resistant wire rope

      (1) Rotation resistant wire rope with swagged fittings rated in accordance with ANSI Standards

      (2) Fabrication and installation methods shall be in accordance with aircraft and ANSI Standards.

TUF-GRIP Slings & Assemblies

Single Part Body Hand Splice

The end of a single wire rope is bent back along the rope to form the eye, and strands are hand-tucked into the body of the rope in what is called a tapered and concealed splice. This splice makes a sling that is easily pulled through narrow spaces; there are no rough ends to snag hands. Slings with rope bodies larger than 1 1/2" diameter are made only with Burnt End splices in which ends of strands are left exposed and cut off with a torch. These may also be cut shorter and served, for smoothness. All have the same rated capacity, size for size.

Single Part Body Mechanical Splice

Eyes are formed using the flemish eye splice. Ends are secured by pressing a metal sleeve over the ends of the strands of the splice. Pull is directly along the centerline of rope and eye. Gives most efficient use of rope capacity and is economical.

Flemish Eye Splice

In the standard flemish eye mechanical splice, rope is separated into two parts: 3 adjacent strands, and 3 adjacent strands and core. These two parts are then re-laid back in opposite directions to form an eye, and ends are secured with a pressed metal sleeve.

E-E E-HT E-EH

	Rope Dia.	RATED CAPACITY - Tons*						Eye Dimensions		Thimble		Hook		
		Vert.	Choker Hitch	Basket Hitch				A	B	A	B	WLL** Tons	E	R
					60°	45°	30°							
	1/4	.56	.41	1.1	.97	.79	.56	2	4	7/8	1 5/8	3/4	15/16	3 7/32
	5/16	.87	.64	1.7	1.5	1.2	.87	2 1/2	5	1 1/16	1 4/8	1	1 1/32	3 21/32
	3/8	1.2	.92	2.5	2.2	1.8	1.2	3	6	1 1/8	2 1/8	1 1/2	1 1/16	4 3/32
6 x 19 IWRC	7/16	1.7	1.2	3.4	2.9	2.4	1.7	3 1/2	7	1 1/4	2 1/4	2	1 7/32	4 11/16
	1/2	2.2	1.6	4.4	3.8	3.1	2.2	4	8	1 1/2	2 3/4	3	1 1/2	5 3/4
	9/16	2.8	2.0	5.5	4.8	3.9	2.8	4 1/2	9	1 1/2	2 3/4	3	1 1/2	5 3/4
	5/8	3.4	2.5	6.8	5.9	4.8	3.4	5	10	1 3/4	3 1/4	5	1 7/8	7 3/8
	3/4	4.9	3.6	9.7	8.4	6.9	4.9	6	12	2	3 3/4	5	1 7/8	7 3/8
	7/8	6.6	4.8	13.	11.	9.3	6.6	7	14	2 1/4	4 1/4	7 1/2	2 1/4	9 1/16
	1	8.5	6.3	17.	15.	12.	8.5	8	16	2 1/2	4 1/2	10	2 1/2	10 1/16
	1 1/8	10.	7.9	21.	18.	15.	10.	9	18	2 7/8	5 1/8	10	2 1/2	10 1/16
	1 1/4	13.	9.7	26.	22.	18.	13.	10	20	2 7/8	5 1/8	15	3 3/8	12
	1 3/8	15.	12.	31.	27.	22.	15.	11	22	3 1/2	6 1/4	15	3 3/8	12 1/2
	1 1/2	18.	14.	37.	32.	26.	18.	12	24	3 1/2	6 1/4	AH-22	3 3/8	12 1/2
	1 5/8	21.	16.	43.	37.	30.	21.	13	26	4	8	AH-30	4	14 1/16
	1 3/4	25.	19.	49.	43.	35.	25.	14	28	4 1/2	9	AH-37	4 1/4	18 5/16
	2	32.	24.	64.	55.	45.	32.	16	32	6	12	AH-45	4 3/4	20 1/4
6 x 37 IWRC	2 1/4	39.	30.	77.	67.	55.	39.	18	36	7	14	AH-60	5 3/4	23 23/32
	2 1/2	47.	37.	94.	82.	67.	47.	20	40	--	--	--	--	--
	2 3/4	57.	44.	113.	98.	80.	57.	22	44	--	--	--	--	--
	3	67.	52.	133.	115.	94.	67.	24	48	--	--	--	--	--
	3 1/2	88.	69.	177.	153.	125.	88.	28	56	--	--	--	--	--
	4	113.	88.	226.	195.	160.	113.	32	64	--	--	--	--	--

VII. Synthetic Longlines

The following is an excerpt from Exhibit 5 of the 2005 – 2007 National Type I & II CWN Helicopter Contract regarding Synthetic Longlines:

b. Synthetic Long Line

(1) Helicopter synthetic long-lines shall be constructed from the HMWPE (High Molecular Weight Polyethylene Equipment) or HMPE (High Molecular Polyethylene Equipment) family of rope fibers including brand names such as Spectra® by Allied Signal or fibers with similar properties.

(2) Rope Diameter. Minimum rope diameter shall be ½-inch

(3) Working or Rated Load

A. The working or rated load of a rope is the maximum static load that will be lifted by the rope. Working loads are based on a percentage of the approximate breaking or ultimate strength of the rope when new and unused. The working load shall be appropriate to the lifting capability of the helicopter.

B. For reference, lifting capability for each category of helicopter is as follows:

Type I	8000 to 30,000 lbs or greater
Type II	1600 lbs to 4500 lbs
Type III	750 lbs to 1600 lbs

(4) Factor of Safety

A factor of safety of 7 shall be used for helicopter synthetic long-lines. Therefore, all ropes shall have an ultimate strength of seven times the rated or working load. For example, if a Type II helicopter line will have a working load of 4,500 pounds, the rope shall have a strength, when new, of at least 31,500 pounds. Rope diameters will vary depending on strength and type of rope.

(5) Knots and Splices

Knots are not permitted in the synthetic long-line. Knots can decrease rope strength by as much as 50%. Splices may be used in the assembly of the long-line, but no mid-line splicing repairs may be done. Re-splicing at the end of the line is permitted only if the rope is in good condition, and the new splice is done per manufacturer's recommended splicing practices. Splices should always follow the manufacturer's recommended splicing practices.

(6) Maintenance and Inspections

Manufacturer's recommended maintenance and inspection procedures shall be complied with.

Synthetic Longline Rope Requirements.

A. Material Type, Rope Diameter and Working load. These items can all be found on the Certificate of Testing that comes with each rope. The figure on the next page is an example of one of these forms. As can be seen, the rope shown is a 12 strand plasma rope, with a 7/8 inch diameter, and a Working Load of 13,200 pounds ***(See paragraph B for further details on Working Loads).*** Don't confuse the Proof Load with the Working Load. Working Loads are typically quite a bit less than the Proof Load.

B. Factor of Safety. Using the information provided in the example, at first glance it would appear that this synthetic longline would be acceptable for some Type I helicopters. However, a factor of safety of 7 is required for synthetic longlines. Therefore, in this example, with a Proof Load of 33,000 pounds, for Forest Service contracts, the maximum Working Load must not exceed 4,714 pounds.

C. Knots/Splices, Covers and Care and Usage. The specification is self-explanatory regarding these items. Take the time to review these paragraphs and become familiar with the requirements.

Document N° – N° du document

CERTIFICATE OF TEST
AND EXAMINATION OF

CHAINS, RINGS, HOOKS, SHACKLES, SWIVELS AND PULLEY BLOCKS

(FORM PRESCRIBED FOR THE PROTECTION AGAINST ACCIDENT OF WORKERS EMPLOYED IN LOADING OR UNLOADING SHIPS.)

Test and Examinations as per tackle Regulations, Subsection 21(1).

CERTIFICAT D'ESSAI
ET VÉRIFICATION DE

CHAÎNES, ANNEAUX, CROCHETS, MANILLES, ÉMERILLONS ET POULIES

(FORMULE PRESCRITE CONTRE LES ACCIDENTS DES TRAVAILLEURS OCCUPÉS AU CHARGEMENT OU AU DÉCHARGEMENT DES NAVIRES.)

Essai et vérification selon le Règlement sur l'outillage de chargement, article 21(1).

DISTINGUISHING NO. OR MARK N° OU MARQUE DISTINCTIF	DESCRIPTION OF GEAR * DESCRIPTION DE L'ENGIN	NUMBER TESTED NOMBRE ESSAYÉ	DATE OF TEST DATE DE L'ESSAI	PROOF LOAD APPLIED CHARGE D'ÉPREUVE APPLIQUÉE (t)	SAFE WORKING LOAD CHARGE PRATIQUE DE SÉCURITÉ (t)
U04F18	7/8" X 100' O/A new purple	1	15 Sep 03	33000 LBS	13200 LBS
	12 strand Plasma with blue				
	liner. Thimbled spliced				
	eye each end.				
	Serial P 6910903				

	NAME — NOM	ADDRESS — ADRESSE
MAKERS OR SUPPLIERS FABRICANTS OU FOURNISSEURS	CANAM AEROSPACE	1 - 19158 - 94 Ave.,
		Surrey, B.C. V4N 4X8
PUBLIC SERVICE, ASSOCIATION, COMPANY OR FIRM MAKING THE TEST AND EXAMINATION SERVICE PUBLIC, ASSOCIATION, COMPAGNIE OU FIRME EFFECTUANT L'ESSAI ET LA VÉRIFICATION	UNALLOY - IWRC	19414 Enterprise Way
		Surrey, B.C. V3S6J9

POSITION OF SIGNATORY
FONCTION DU SIGNATAIRE: TEST MACHINE OPERATOR

I CERTIFY THAT ON

J'ATTESTE QUE LE

2002-September-15
Date (Y/A-M-D/J)

THE ABOVE GEAR WAS TESTED AND EXAMINED BY ME IN THE MANNER SET FORTH ON THE REVERSE SIDE OF THIS CERTIFICATE; THAT THE EXAMINATION SHOWED THAT THE GEAR WITHSTOOD THE PROOF LOAD WITHOUT INJURY OR DEFORMATION; AND THAT THE SAFE WORKING LOAD ON THIS GEAR IS AS SHOWN IN COLUMN "SAFE WORKING LOAD".

LES ENGINS DÉCRITS CI-DESSUS ONT ÉTÉ ESSAYÉS ET VÉRIFIÉS PAR MOI DE LA MANIÈRE INDIQUÉE AU VERSO DU PRÉSENT CERTIFICAT, QUE LA VÉRIFICATION A DÉMONTRÉ QUE LES ENGINS ONT SUBI LA CHARGE D'ÉPREUVE SANS AVARIE NI DÉFORMATION ET QUE LA CHARGE PRATIQUE DE SÉCURITÉ APPLIQUÉE À CES ENGINS EST CELLE QUI EST INDIQUÉE À LA COLONNE "CHARGE PRATIQUE DE SÉCURITÉ."

(SEAL – CACHET)

sign on – signé le 2002-September-15
Date (Y/A-M-D/J)

I.M. Kool

VIII. Miscellaneous Bell 205 STC's

SH5132NM **212 Rotor Blades** – 205A-1

SH2394NM **-17 Engine Installation** – 205A-1, 205B
-17A Engine
-17B Engine

SH5976NM **-17A/B & 212 Rotor Blades** – 205A-1

SH5977NM **Nine (9) Passenger or Less** - 205A-1

SH4305NM **Particle Separator** – 205A, 205A-1, 205B

SH5122NM **EGT/MGT Gage** – 204B, 205A-1, 205B
EGT -13B/-17A Engines
MGT – 17B Engine

SR01226SE **Left or Right Hand Pilot-in-Command**
205A, 205A-1, 205B

SH2692NM **Dual Electric Boost Pump** – 205A-1

SH4775NM **Manual Fuel Start Switch** – 205A-1

SH5797NM **T53-HC Engine Wash Kit** – 205A-1

SH2697NM **Vertical Reference Door** – 205A-1

IX. Ex-Military Aircraft

Restricted Category – Ex-Military Helicopters

The military has been dumping older surplus aircraft on the civilian market for several years. 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 US Army. There has been an explosion recently with surplus/restricted aircraft in the field. The OH-58 is just now coming on line with vendors, but over the past several years the popular UH-1H, with several new STC's has become a work horse in the Type II category.

The OH-58 helicopters are mostly operated by state and local governments, but a small number have received a Type Certificate under restricted category. The models that have TC's are the OH-58A, OH-58A+, and OH-58C. There are not many of these aircraft in use by civilian venders, but it is just a matter of time before we see the OH-58A+ and OH-58C approved for restricted Type III work. Their civilian counterpart is the Bell 206BIII.

The UH-1H helicopter has been coming on strong in the fire fighting industry. With the installation of the T53-L-703 engine and Composite Main Rotor Blades, this aircraft is finding itself as a contender for fire use. There are several different models of UH-1's being used under CWN contracts. The civilian counterpart is the Bell 204/205A/205A1.

UH-1B – There are 19 STC's for the UH-1B. The main STC is the installation of the Honeywell (Lycoming) T53-L-13 (1400 shp) series engine. It replaced the smaller T53-L-9 (1100 shp) and T53-L-11 (1100 shp) series engines.

UH-1E, F, L, P, and TH-1L – There are between 4 to 8 STC's for these five airframe models. The main STC is the installation of the Honeywell (Lycoming) T53-L-13 series engine. It replaced the General Electric T58-GE-3 engine.

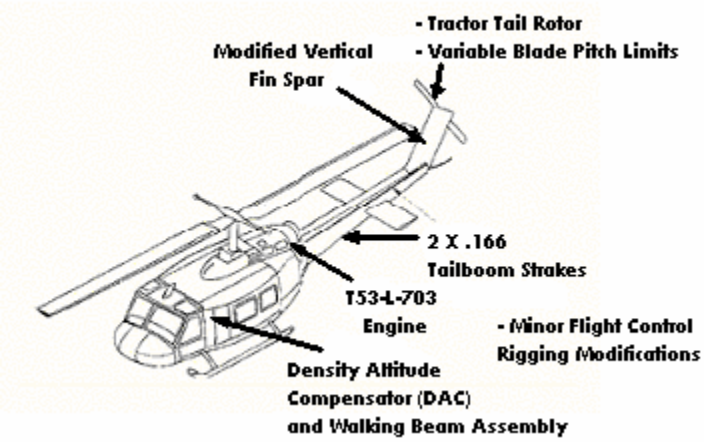
UH-1H – There is 24 STC's for the UH-1H and more are sure to come. The main STC is the installation of Honeywell's (Lycoming) T53-L-703 (1800 shp) engine. It is being used to replace the T53-L-13B and has made the UH-1H a powerful contender in the Type II category. A discussion of the upgrade to the 703 configuration is given below

The engine upgrades on all the above UH-1 aircraft are to enhance the performance of the airframe. The most noticeable is the installation of the Bell Cobra T53-L-703 into the UH-1H airframe. The power to weight ratio has been a big improvement over the T53-L-13B. One result of this modification is operators are having a hard time meeting the STC requirements. **Topping** the engine is difficult. An explanation of topping can be found in Appendix 6. Most of the time, the operator has to

go above the stated chart values. The topping check is very important for establishing the power checks and performance trends. The STC requires using the military charts and manuals. These charts and manuals do not take into account this type of airframe to engine combination.

Besides the usual AD's that the FAA puts out on aircraft, the military puts out its own form of airworthiness directive. Only the Army directives will be mentioned here, but the other military services directives may apply also. Depending on how the aircraft was certificated it may be required to comply with the FAA Airworthiness Directives, the Military Safety of Flights message (SOF), and Aviation Safety Action Message (ASAM). The difference between the SOF and ASAM is the time requirements for compliance. An SOF immediately grounds the aircraft until the discrepancy is corrected. An ASAM normally requires a discrepancy to be corrected within a certain time frame. The web site for finding the Army's Aviation Safety Messages can be found in Chapter 4 of this guide.

Bell UH-1H with T53-L-703 Upgrade. The following is a discussion on one of the upgrade packages available for the UH-1.



The UH-IH upgrade, described in detail features:

- Complete engine overhaul and fully modernized upgrade to the enhanced Honeywell T53-L-703 configuration. The upgrade from the T53-L-13B engine alone provides approximately 30% more power at high/hot conditions along with greatly reduced operating and support costs.
- Low cost airframe modifications to enhance directional control power by over 40% at high/hot conditions, necessary to match the more powerful T53-L-703.

UPGRADE FEATURES & BENEFITS

The upgrade provides significantly greater useful load and improved directional control, and provides 1500 to 2500 pounds more payload from 3000 to 10,000 feet altitude on an ISA + 30°C day. This is accomplished by a combination of the following engine and airframe modifications.

The existing T53-L-13B turbine engine is modified by the installation of a kit supplied by Honeywell that increases engine performance by 400 shaft horsepower while enhancing component life/durability. Installation of this kit along with complete engine overhaul re-identifies the engine as a T53-L-703. Only minor engine-specific changes are required such as basic instrument markings, start fuel switch, and electric engine oil cooler blower for increased cooling efficiency.

The improved design of the T53-L-703 lowers the operating cost via extended Time Between Overhaul (TBO) to 5000 hours and by use of Original Equipment Manufacturer (OEM) parts during the overhaul and upgrade process. The overhaul and upgrade kit, results in a 30% increase in shaft horsepower of the T53-L-703 compared to the current T53-L-13B model for a range of operating altitudes.

To fully and safely utilize this increased power and also supply FAA-required tail rotor controllability, the upgrade incorporates a directional control power improvement system. This dramatically extends the UH-IH high/hot takeoff and landing operations when combined with the higher engine power of the T53-L-703. These enhancements consist of the following four approaches:

- Installation of strakes on the tailboom
- Conversion to a tractor tail rotor configuration
- Control of increased tail rotor blade pitch limit by an electro-mechanical Density Altitude Compensator (DAC)

Brief highlights of these enhancements are identified in the figure above and are discussed below:

- **Tailboom Strakes:** NASA data and subsequent BLR FAA STC testing show that incorporation of tailboom strakes will decrease the requirement for tail rotor anti-torque by about 10% in those flight regimes where tail rotor anti-torque is critical, such as right sideward flight or hover flight with winds from the right. The tailboom strake acts as a spoiler of downwash flow over the left side (U.S. main rotor rotation) of the tailboom, reducing the pedal input required for hover flight, aiding the tail rotor in critical right sideward flight.
- **Conversion to Tractor Tail Rotor** This modification requires significant changes to the tailboom configuration, utilizing the existing tail rotor gearbox. The modification provides approximately 20% increase in tail rotor control power, while requiring no additional drive train power.

X. HELICOPTER DATA

Model	Engine	Max Internal	Max External	F/F
UH-1H	T53-L-13	9500	9500	89
UH-1N	PWC T400	10000	10000	89
204 (UH-1)	T5309/T5311A	8500	8500	88
205A	T5311A	8500	8500	89
205A-1	T5313A/B	9500	10500	89
205B	T5317A	10500	11200	89
205+ (Eng)	T5317A	9500	10500	89
205++ (Eng & Blades) STC SH5977NM	T5317A/B	10200	10500	89
206B3	250-C20J/R	3200	3350	27
206L	250-C20B/J	4000	4000	32
206L1	250-C28B (C30P)	4050 (4150)	4250	32
206L3	250-C30P	4150	4250	38
206L4	250-C30P	4450	4450	38
212	PT6T-3/3B	11200	11200	100
214ST	GE T700/2C	17500	17500	133
412	PT6T-3	11900	11900	110
407	250-C47B	5000 - 5250	6000	45
AS350B	Arriel 1B	4300	4988	45
AS50BA	Arriel 1B	4630	4988	45
AS350B1	Arriel 1D	4850	5402	46
AS350B2	Arriel 1D1	4961	5512	48
AS350B3	Arriel 2B	4961	6172	50
AS355	250-C20F	5070		
SA315B Lama	Artouste III B	4300	5070	58
SA316B Allouette	Artouste III	4850		58
SA316C Allouette	Artouste III D	4960	4960 (1650 Hook)	58
SA319B Allouette	Astazou XIV B	4960	4960 (1650 Hook)	55
SA330J Puma	Turmo IV C	16300		179
Hughes 369	250-C18/C20/C30	3000	3550	
Kaman K-1200	T5317A	6500	12000/6000 Hook	85
S-61L	GE CT58-140	19000	22000	170
S-61N	GE CT58-140	19000	22000	170
S64E / CH-54E	JFTD 12A-4A		42000	525
S-64F / CH-54B	JFTD 12A-5A		42000 / 47000	525
BV107	GE CT58-110			180
BV234	Lyc AL5512			405

Jet A = 7.0 lbs/gal
AVGAS – 6.0 lbs/gal

Appendix 2

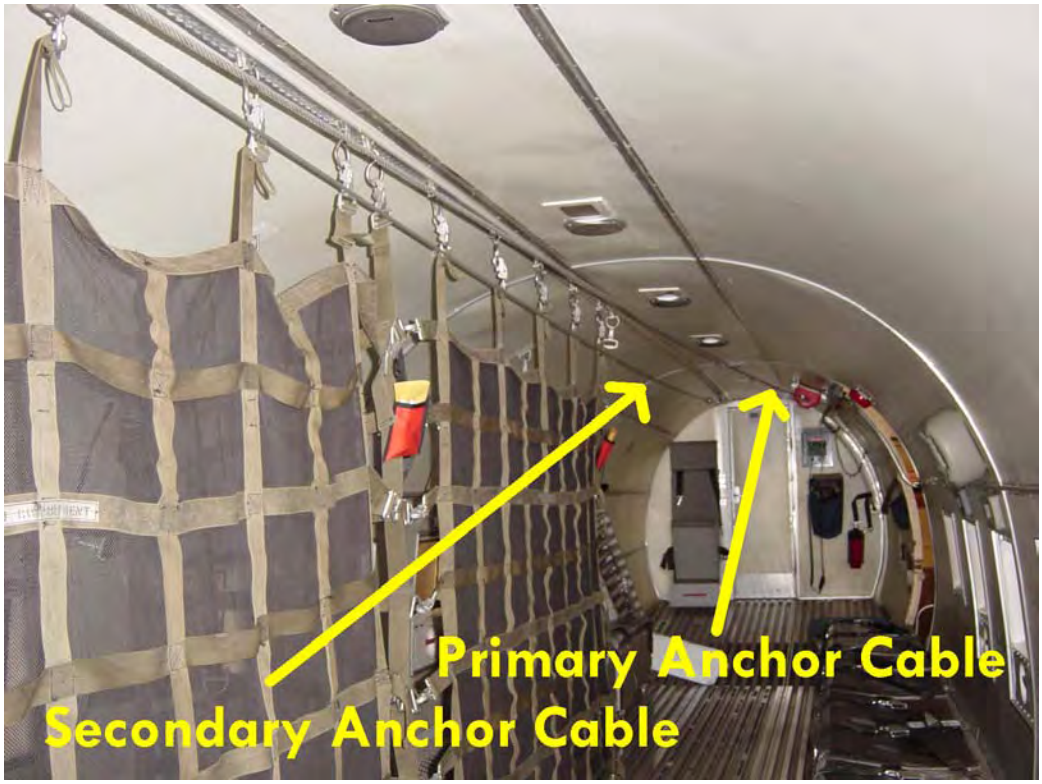
Airplane Fire-Fighting Equipment

I. Introduction. Inspectors encounter quite a bit of equipment that is used exclusively for fire fighting. Depending on the inspectors background some of it may be familiar. This appendix will provide some general information on some of the more common items of aircraft and equipment used in fire fighting.

Note: Information shown in this section is <u>for Reference Only</u>.

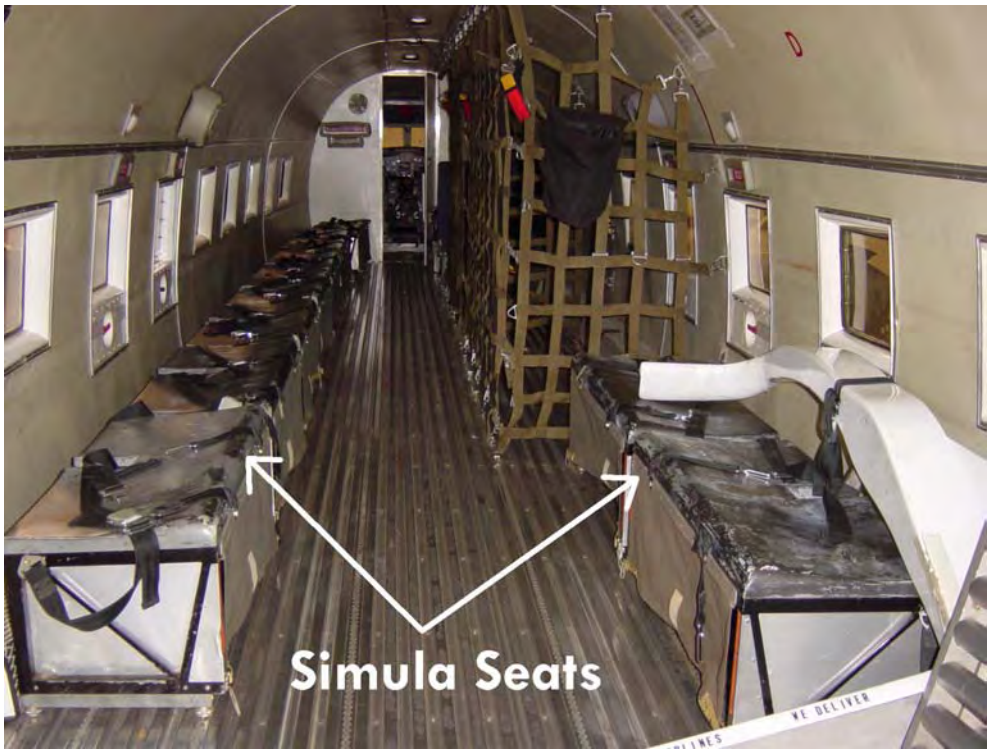
II. Smokejumper Equipment.

Anchor Cables (Primary and Secondary). Jumpers attach their parachute static lines to the primary cable prior to jumping, which will automatically deploy their chutes. The Secondary cable is used by spotters as a safety device.

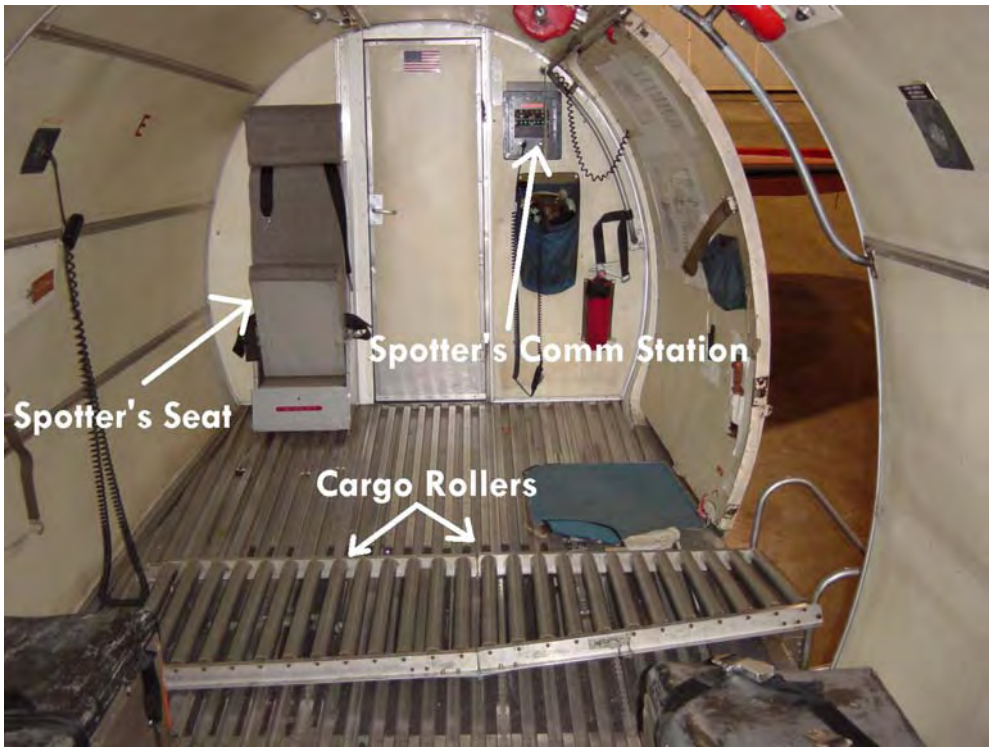


Note: Forest Service smokejumpers use circular chutes (called round chutes), which are automatically deployed after they exit the aircraft. Bureau of Land Management (BLM) jumpers use square steerable chutes, and are deployed manually by the jumper after they exit the aircraft. It is mentioned here because at times "mixed" loads of jumpers are sometimes deployed from the same aircraft.

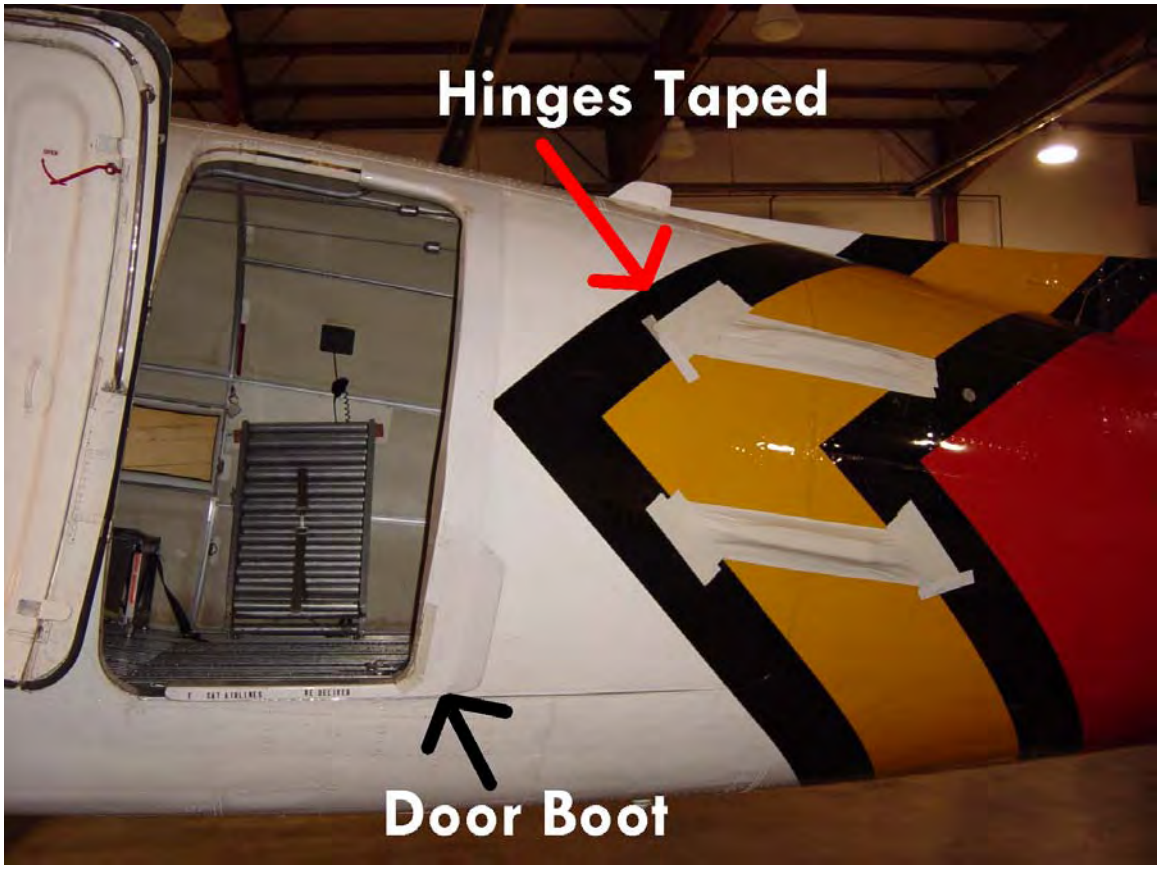
Simula Seats. Approved for passenger use on the **DC-3 <u>Only</u>.**



Spotter Position and Cargo Roller.



Door Boot. Hinges aft of the cargo door are taped, and a door boot is installed over the leading edge of the aft door to prevent smokejumpers and their equipment from catching on protrusions and sharp corners.



United States Department of Agriculture
Forest Service

Aviation Technical Alert

Number 2004-01
Date: July 13, 2004
Distribution: Aviation Operations
Subject: Static Line and Anchor Installation

There have been two recent incidents of the vertical static line cable stanchions in two different Sherpas being either installed incorrectly or a tension screw being significantly loose so as not to be properly secured. In one instance the stanchion assembly became detached from the floor track during a cargo drop but was kept from being pulled out the door by the vertical rod above the assembly, which is non-structural in nature.

In 2002 there were some problems with mounting bolts backing out of the horizontal overhead static line cable installed in a contract DC-3TP. When investigating this occurrence, discrepancies in attachment bolts and installations were found between all of the DC3-TPs. It was even noted that one of the overhead cables was installed backward in the contract aircraft.

Vertical static line cable installations are the same or very similar to the C-23A in the Twin Otters, Dornier and Casa. In the case of the stanchion that became detached from the floor, had the weight of a smokejumper rather than a cargo bundle been applied to the rod that kept the stanchion from leaving the aircraft, a total malfunction could have been the result. Please install these accessories carefully, and inspect daily.

Recommendation: When accessories that are as essential as the static line cable anchors are removed and re-installed, they must be in conformance with the STC or MTDC drawings, and installed by a certified mechanic. After removal or installation, an appropriate logbook entry shall be made.

Additionally, it is imperative that all static line cables be thoroughly looked at during every pre-flight inspection for security and proper installation.

Contact: Pat Norbury, NAOO (208) 387-5646 or Asher Williams, NALO (208) 387-5617

/s/ Ron Hanks
National Aviation Safety and Training Manager
U.S. Forest Service

III. Large Airtankers. Air tankers include both fixed wing and Type I helicopters. The max gallons listed below are the max the tanks will hold, not what they are allowed to carry under contract. Nationally, all tankers are presently required to "download" for a margin of safety 10% of their maximum payload, for aircraft with a tank capacity of 2000 gallons or less. For aircraft with a tank capacity of over 2000 gallons, a 15% download is required. Single Engine Air Tankers other than Queen Bee AT-802F's are covered in paragraph IV.

Air Tanker Identification

NO.	Owner/Operator	Aircraft Type	"N" No.	Aircraft Serial No.
	Multi-Engine			
00	Aero Union Corp.	P-3A	N900AU	151391
01	Aero Union Corp.	SP-2H	N701AU	145920
02	Reserved			
03	Aero Union Corp.	SP-2H	N703AU	147967
04	Retired			
05	Neptune, Inc.	P2V-5	N96278	131459
06	Neptune, Inc.	P2V-5	N9855F	131445
07	Neptune, Inc.	P2V-5	N1386K	131424
08	Retired			
09	Neptune, Inc.	P2V-7	N4235T	150282
10	Neptune, Inc.	P2V-7	N4235N	144681
11	Neptune, Inc.	P2V-7	N14447	8010
12	Neptune, Inc.	P2V-5	N96264	128346
13	Reserved			
14	Aero Union Corp.	C-54E	N62297	44-9102
15	Aero Union Corp.	C-54G	N2742G	36089
16	Aero Union Corp.	SP2H	N716AU	140963
17	Reserved			
18	Aero Union Corp.	SP2H	N718AU	147964
19	Reserved			
20	Aero Union Corp.	P-3A	N920AU	151355
21	Aero Union Corp.	P-3A	N921AU	151385
22	Aero Union Corp.	P-3A	N922AU	151387
23	Aero Union Corp.	P-3A	N923AU	151372
24	Reserved			
25	Aero Union Corp.	P-3A	N925AU	151361
26	Retired			
27	Aero Union Corp.	P-3A	N927AU	151369
28	Reserved			
29	Int'l Air Response	DC-7B	N45353	45353
30	Retired			
31	Int'l Air Response	C-130A	N117TG	54-1631
32	Int'l Air Response	C-130A	N118TG	57-0512

NO.	Owner/Operator	Aircraft Type	"N" No.	Aircraft Serial No.
33	Int'l Air Response	DC-7B	N4887C	45351
34				
35				
36				
37				
38	Retired			
39				
40	Reserved			
41	Reserved			
42	Reserved			
43	Neptune, Inc	P2V-7	N443NA	145906
44	Neptune, Inc.	P2V-5	N1386C	128422
45	Neptune, Inc	P2V-7	N445NA	140443
46				
47				
48	Minden Air Corp	P2V-7	N4692A	148397
49	Reserved			
50	Reserved			
51	Reserved			
52	Reserved			
53	Reserved			
54	Reserved			
55	Minden Air Corp	P2V-7	N355MA	148344
56				
57				
58				
59				
60	TBM, Inc.	DC-7B	N838D	45347
61	Reserved			
62	TBM, Inc.	DC-7	N401US	45145
63	TBM, Inc.	C-130A	N473TM	56-473
64	TBM, Inc.	C-130A	N466TM	57-466
65	TBM, Inc.	C-54E	N8502R	44-9141
66	TBM, Inc.	DC-7	N6353C	45486
67	TBM, Inc.	C-130A	N531BA	56-531
68	TBM, Inc.	DC-6	N90739	43044
69				
70	CDF	S2T		RNM
71	CDF	S2T		RNM
72	CDF	S2T		HMT
73	CDF	S2T		HMT
74	CDF	S2T		PRB
75	CDF	S2T		PRB
76	CDF	S2T		PTV
77	CDF	S2T		

NO.	Owner/Operator	Aircraft Type	"N" No.	Aircraft Serial No.
78	CDF	S2T		FAT
79	CDF	S2T		
80	CDF	S2T		3O7
81	CDF	S2T		3O7
82	CDF	S2T		O22
83	CDF	S2T		O22
84	CDF	S2T		
85	Flying Firemen	S-PBY	N85U	64041
85	CDF	S2T		STS
86	CDF	S2T		STS
87	CDF	S2T		
88	CDF	S2T		O17
89	CDF	S2T		O17
90	CDF	S2T		UKI
91	CDF	S2T		UKI
92	CDF	S2T		
93	CDF	S2T		CIC
94	CDF	S2T		RDD
95	CDF	S2T		RDD
96	CDF	S2T		FOT
97	Hawkins & Powers	KC-97	N1365N	52-2698
98				
99	Retired			
100	CDF	S2T	N441DF	MCC
101				
102				
103				
104				
105				
106				
107				
108				
109				
110				
111				
112				
113				
114				
115				
116				
117				
118				
119	ARDCO	C-54G	N406WA	35944
120				

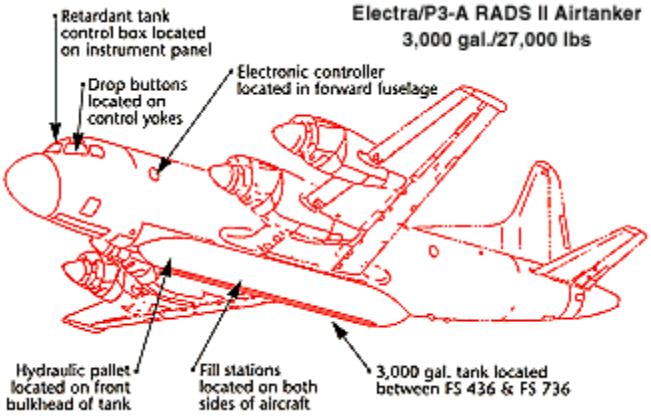
NO.	Owner/Operator	Aircraft Type	"N" No.	Aircraft Serial No.
121	Hawkins & Powers	S-P4Y-2	N2871G	66302
122				
123				
124	Hawkins & Powers	S-P4Y-2	N2872G	66300
125				
126	Hawkins & Powers	S-P4Y-2	N7962C	59882
127	Hawkins & Powers	S-P4Y-2	N6884C	59701
128				
129				
130				
131	Hawkins & Powers	C-130A	N131HP	56-534
132				
133	Hawkins & Powers	C-130A	N133HP	57-842
134				
135				
136				
137				
138	Reserved			
139		-		
140				
141				
142				
143				
144				
145				
146				
147				
148				
149				
150				
151	ARDCO	C-54E	N460WA	44-9133
152	ARDCO	C-54D	N9015Q	43-17228
153	Reserved			
154	Marsh Aviation	S2-A	N736MA	136736
155	Marsh Aviation	S2-T	N746MA	136746
156	Reserved			
157	Reserved			
158				
159				
160	Aero Flite	C-54E	N96358	44-9058
161	Aero Flite	C-54G	N82FA	35960
162	Aero Flite	C-54G	N3054V	10547
163	Reserved			
164	Reserved			
165	Reserved			

NO.	Owner/Operator	Aircraft Type	"N" No.	Aircraft Serial No.
166	Reserved			
167				
168				
169				
	Single Engine (SEAT)	* above 800 gallon *		
170				
171				
172				
173				
174				
175				
176				
177				
178				
179				
180	Reserved	AT-802F		
181	Queen Bee	AT-802A/F	N91092	5
182	Queen Bee	AT-802F	N5035K	48
183	Queen Bee	AT-802F	N9002K	78
184	Queen Bee	AT-802F	N9135F	
185	Western Pilot Services	AT-802F	N1531S	
186	Western Pilot Services	AT-802F	N1546N	
187	Reserved	AT-802F		
188	Reserved	AT-802F		
189				
190	Reserved	AT-802F	N6159F	
	Water Scooper			
215	North Carolina State FS	CL-215	N215NC	1000
250	Reserved			
262	Aero Flite	CL-215	N262NR	1081
263	Minnesota State	CL-215	N263NR	1082
266	Minnesota State	CL-215	N266NR	1102
267	Aero Flite	CL-215		
	Helitanker	* Tanker # assigned to Tank*		
700				
701	Croman Corporation	SH-3H	N611CK	148966
702	Reserved			
703	Reserved			
704				
705	Reserved			
706	Reserved			
707	Evergreen	S-64 H6EA	N6979R	64079

NO.	Owner/Operator	Aircraft Type	"N" No.	Aircraft Serial No.
708	Reserved			
709	Reserved			
710	Reserved			
714				
715	Helicopter Transport Ser	CH-54B	N715HT	69-18470
716	Helicopter Transport Ser	CH-54B	N716HT	69-18484
717	Reserved			
718	Helicopter Transport Ser	CH-54B	N718HT	69-18467
719	Reserved			
720	Helicopter Transport Ser	CH-54B	N720HT	69-18463
721	Reserved			
722	Helicopter Transport Ser	CH-54B	N722HT	69-18468
723	Reserved			
724	Reserved			
725	Reserved			
726				
727				
728				
729				
730	Ericksen Air Crane	S64 H6EA	N154AC	64037
731	Erickson Air Crane	S64 H6EA	N158AC	64081
732	Erickson Air Crane	S64 H6EA	N159AC	64084
733	Erickson Air Crane	S64 H6EA	N163AC	64093
734	Erickson Air Crane	S64 H6EA	N164AC	64034D
735	Erickson Air Crane	S64 H6EA	N173AC	64015
736	Erickson Air Crane	S64 H6EA	N178AC	64097
737	Erickson Air Crane	S64 H6EA	N179AC	64091
738	Reserved			
73X	Erickson Air Crane	S64 H6EA	C-FCRN	64061
740	Reserved			
741	Erickson Air Crane	S64 H6EA	N189AC	641001
742	Erickson Air Crane	S64 H6EA	N194AC	64017
743	Erickson Air Crane	S64 H6EA	N217AC	64064
744	Erickson Air Crane	S64 H6EA	N218AC	64033
745	Erickson Air Crane	S64 H6EA	N223AC	64086
746	Erickson Air Crane	S64 H6EA	N229AC	64018
747	Erickson Air Crane	S64	N6962R	64058

		H6EA		
NO.	**Owner/Operator**	**Aircraft Type**	**"N" No.**	**Aircraft Serial No.**
748	Erickson Air Crane	S64 H6EA	C-GJZK	64003
749	Erickson Air Crane	S64 H6EA	C-GESG	64065
760	Reserved			
761	Carson Helicopters	S-61A	N81661	61272
762	Carson	S-61N	N612RM	61744
763	Carson Helicopters	S-61A	N4503E	61220
764	Reserved			
765	Carson Helicopters	S-61A	N3173U	61186
766	Carson Helicopters	S-61A	N116AZ	61242
767	Carson Helicopters	S-61A	N7011M	61216
768	Reserved			
769	Carson Helicopters	S-61A	N81697	61147
780	Siller Brothers Inc.	S-64E	N4037S	64101
781	Siller Brothers Inc.	S-64E	N4035S	64099
782	Reserved			
790	Heavylift Inc. Helicopters	CH-54	N61564	66-18410
791	Reserved			
792	Heavilift Inc. Helicopters	CH-54A	N54HL	18447
793	Reserved			
794	Heavilift Inc. Helicopters	CH-54	N44094	67-18421
799	Heavilift Inc. Helicopters	CH53D		
	Supertanker			
910	Reserved			
947	Evergreen	B-747ST	N470EV	20653

RADS II for the P-3 Orion / L-188
Retardant Aerial Delivery System II



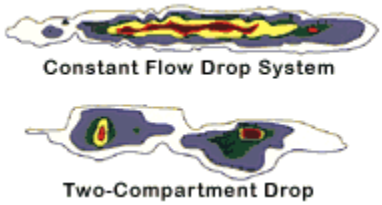
RADS II
The Aero Union RADS II constant flow belly tank is available for both the Lockheed P-3 Orion and the L-188 Electra. The RADS II system employs a patented, computer-controlled door system that offers flow rate combinations selected by the flight crew. The 3000 gallon capacity tank provides flexibility in available line lengths and coverage levels.

Computer Controlled
The tank doors are mechanically simple, open from the center and operate in unison. The doors operate with full or partial tank fluid levels, precisely controlling the flow regardless of the level of retardant remaining in the tank. The constant flow installation senses the level of retardant and constantly adjusts the door opening to maintain selected flow rates. This computerized digital control logic enables the pilot to select and control coverage level and quantity to produce the desired drop pattern.

Credibility
Aero Union's RADS II provides a continuous and uniform drop pattern with no overlapping or gaps. It is certified by both the FAA and Transport Canada. The system has been flight tested by the U.S. Forest Service and is Interagency Airtanker Board (IAB) approved.

Versatility
RADS II provides the most reliable, versatile, effective and economical turbine powered, 3,000 gallon air tanker operating in the world today.

Results
Comparing the resulting ground patterns from the RADS II constant flow tank system versus older multi-door designs, the results are unequaled. The constant flow system more efficiently distributes the retardant uniformly, preventing possible fire burn through.



MAFFS for the C-130 Hercules
Modular Airborne Fire Fighting System

The Original Roll-on, Roll-off Fire Fighting System
The ideal aerial fire fighting system permits the operator's aircraft to be normally utilized for a variety of cargo and personnel movement missions, but readily convert to an effective fire fighting weapon when called.

MAFFS is a self-contained, reusable 3000 gallon aerial fluid dispersal system which enables cargo/utility aircraft to destroy grass, brush, and forest fires, and has been used extensively in the United States, Europe, and Africa. Pneumatically powered, the system consists of tank modules, a control module, and a dissemination module. Electrical power is provided by the aircraft or by a 24 volt battery located on the control module.

MAFFS is derived from a joint U.S. Air Force/Forest Service project to develop a system which could be installed in a Lockheed C-130 Hercules aircraft equipped with the USAF 463L cargo handling system that would not require any aircraft modification. MAFFS permits variable quantity drops, with volume and flow rate pre-selected at the control module, depending on the method of attack selected. At maximum flow rate, MAFFS has the ability to discharge its entire load in less than 5 seconds.

Because of its unique modular design, MAFFS readily adapts to a wide variety of rear-loading heavy transport aircraft.

Handling and Safety
Unlike a gravity system in which the aircraft center of gravity moves aft as the retardant flows to the rear of the aircraft to exit, MAFFS discharges the retardant alternately from a series of tanks to ensure that the center of gravity remains within limits.

U.S. Air Force pilots, experienced with MAFFS in the C-130, state that there is no hint of control loss during a retardant drop, and the natural tendency to climb as a result of the rapid reduction of aircraft weight is offset by the combined effects of forward center of gravity movement and pitch down thrust from the MAFFS discharge. These elements combine to provide a steady flight and constant control movement throughout the MAFFS retardant discharge.

There are other fire fighting systems available in the world today which might be modified for installation in the C-130 aircraft, but no other modular system is specifically designed for the aircraft and its particular flight characteristics. Other designs have been tested in the C-130, but all have been proven to be less effective than MAFFS, and some have even demonstrated potentially dangerous flight handling characteristics.

MAFFS II for the C-130 Hercules
Airborne Fire Fighting System

The Next-Generation Roll-on, Roll-off Fire Fighting System
Aero Union has designed a new fire fighting system for the Lockheed Martin C-130. This new system was developed for the USDA Forest Service with the help of Lockheed and the US Air National Guard.

This new system, nicknamed MAFFS II, will replace fire-fighting equipment that the Air National Guard has used in its C-130's for more than thirty years. The older system, called MAFFS or Modular Airborne Fire Fighting System, is an Aero Union product. The MAFFS II development was a team effort from the start, and reflects the experience and expertise of the Forest Service, the Air National Guard, Aero Union, and Lockheed with respect to fighting wild land fires from the air. It truly represents a breakthrough in roll-on, roll-off airborne fire fighting equipment technology.

The MAFFS II is capable of delivering up to 4000 gallons of retardant or water/foam using a variety of drop profiles required to attack various fire conditions. The system is fully capable of delivering up to coverage level 8, which is the maximum level required by the Forest Service and represents the application of eight gallons of fire fighting fluid per one hundred square feet of surface. This coverage level is double that of the older MAFFS unit. Further, the MAFFS II has 1000 gallons more capacity than the MAFFS.

Unlike the older system it replaces, the MAFFS II requires no ground support compressors for recharge but instead employs a self-contained compressor system that is integral to the design. This system permits in-flight recharging to and from a drop.

A significant problem with other airborne fire fighting systems is that they often "painted" the external tail sections of the aircraft in which they were installed with fire fighting fluid. This fluid can be somewhat corrosive to aircraft metal. Operators of such systems would incur the considerable expense of cleaning this fluid off of their air tankers.

To avoid this problem and to save the Air National Guard the associated cost of having to clean retardant off its C-130's, Aero Union designed the MAFFS II to use an innovative scheme for expelling fire-fighting agent out the C-130's sealed paratroop door on the left side of the aircraft. This design ensures that no contamination of the aircraft's surfaces occurs during a drop.

An added advantage of this design is that now an MAFFS II-equipped C-130 can fly fully pressurized to and from the fire site and remain pressurized during the actual drop. Doing so affords the MAFFS II operator major advantages over older systems in both crew safety and aircraft operating efficiency.

Aero Union extensively used composite materials in its design of the many MAFFS II components including the systems' main tank. The resulting weight savings of this approach translates to greater payload and lower operating costs. The MAFFS II weighs approximately 8,000 pounds empty, including its self contained compressor system, or about fifty percent less than an equivalent MAFFS. Yet the MAFFS II carries 1000 gallons more retardant than its predecessor. In addition to weight savings, the use of composite materials offers the added advantage of eliminating corrosion in the system itself.

IV. Single Engine Air Tankers (SEATS)

Restricted Category Agricultural aircraft certificated under the Civil Aeronautics Regulations (CARs) may be operated above the Maximum Gross Weight limitations listed in their Type Certificate. In the Civil Aeronautics Manual (CAM) 8, there are provisions for increasing the Maximum Gross Weight, to whatever weight the aircraft can be demonstrated to be safely operated. A logbook entry must be made reflecting the special purpose load the aircraft is capable of operating with. The maximum capacities (weights) must be placarded adjacent to the filler covers. For further information on this subject review CAM 8, paragraphs 8.10-3 and 8.10-4.

Thrush G10

The 400-Gallon Turbo Thrush

- Rugged Thrush Airframe
- 400-Gallon Clear-View Hopper
- 47.6-Foot Wing Span (350 Sq.Ft.)
- Rugged Wide-Stance Landing Gear
- 29-Inch Tires and Wheels With Dual Caliper Disk Brakes
- Simple Quick-Change Wet/Dry Dispersal System
- Superior Corrosion Protection
- Pressurized Aft Fuselage
- Standard Shadin Fuel Flow Indicator and Totalizer
- Smoker Drift Detection System Standard

Specifications and Performance Data		
• Fuel Capacity	136 Gallons	515 Liters
• Empty Weight	4,200 lbs.	1,900 kgs.
• Typical Operating Weight	9,300 lbs.	5,600 kgs.
• Hopper Capacity (Dry)	53 cu. ft.	1.50 cu. mtrs.
• Hopper Capacity (Liquid)	400 gallons	1,515 liters
• Length	33 ft.	10.06 mtrs.

• Wing Span (long)	47 ft. 6 in.	14.478 mtrs.
• Wing Area (long)	350 sq. ft.	32.52 sq. mtrs.
• Tread Width	9 ft.	2.74 mtrs.
• Velocity Never Exceed	159 mph	256 kph
• Working Speeds	90-150 mph	153-241 kph
• Stall Speed as Usually Landed	57 mph	92 kph
• Sea Level Rate of Climb at 6,000 lbs.	1,500 fpm	457.2 mpm
• Take-Off Distance @9,300 lbs.	1,200 ft.	366 mtrs.
• Landing Distance as Usually Landed	600 ft.	183.8 mtrs.
• Landing Distance as Usually Landed W/Reverse	400 ft.	121.9 mtrs.
• Fuel Consumption	35-47 gph	133-178 lph
• Cruising Speed @ 55% Power	150 mph	241 kph
• Ferry Range @ 45% power and 135 mph @ 7,500 ft.	450 miles	725 kilometers
Note: Performance figures calculated for Pratt & Whitney PT6A-15AG engines @ 680 shaft horsepower and Allied Signal TPE331-1 engines @ 665 shaft horsepower. *Ag specs are preliminary and subject to change.*		

Air Tractor AT-802

The AT-802 series is the world's largest single engine aircraft, and its popularity reflects the industry's trend to larger high-production turbine equipment. Whether it's used for fertilizing forests, spraying huge cotton fields, or spraying dispersant on oil spills, this plane has the productivity and performance to get big jobs done efficiently.

Hopper capacity	800 U.S. gallons
Engine type	PT6A-65AG (-67AG opt.)
Engine H.P. and R.P.M	1295 @ 1700
Take-off weight	16000 lbs.
Landing weight	16000 lbs
Empty weight w/ spray equip. installed	6320 lbs
Useful Load	9680 lbs
Fuel capacity	254 U.S. gallons (308 or 380 gal. opt.)
Wing span	58 ft.

NOTES

Appendix 3

Avionics Special Equipment

I. Introduction. This appendix will provide some general information on some of the more common pieces of avionics equipment used in fire fighting aircraft.

Note: Information shown in this section is <u>for Reference Only</u>.

II. 3-Pin Accessory. A 3-pin accessory plug is required on most aircraft the Forest Service uses in the Special Mission role. They supply aircraft power for Air Attack Radio Kits, Infra-red equipment, Plastic Sphere Dispenser (PSD) machines to name a few. The avionics website to get current drawings of a 3-pin connector is: http://www.fs.fed.us/fire/niicd/documents

3 PIN ACCESSORY POWER SOURCE (APS) CONNECTOR

For: Supplemental Slip-in Radio Equipment, IR Equipment, Sphere Dispensers, and Miscellaneous Equipment.

Pin	Function
A	+28 VDC (On 28 Volt Aircraft Only)
B	Aircraft Ground
C	+14 VDC (On 14 Volt Aircraft Only)

PARTS FOR APS CONNECTOR	
APS Connector	MS3112E12-3S
Mating Connector	MS3116F12-3P
Dust Cap for APS Connector (Optional)	MS3181-12C

In order to test 3-pin connectors on an aircraft a test plug will have to be fabricated. The MS numbers are listed above, and the schematics can be found at the end of Appendix 7 or on the avionics website.

III. Helicopter 9-Pin Connector. The 9-pin connector is used to power water buckets, some torches and remote cargo hooks. These connectors are normally required only on Type II & III helicopters. Below is the pin-out for one variation. The avionics website lists the pin-outs for other applications.

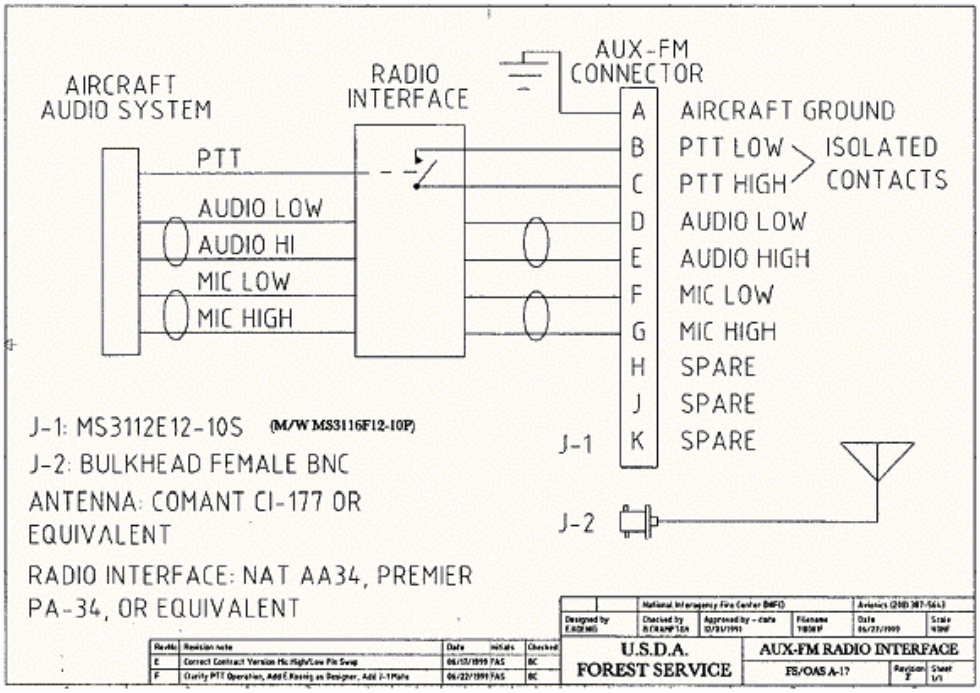
#1. For: Remote Hook, Bambi Bucket, Simplex Helitorch, and Seeders (2 Wire Type). For additional information see FS/OAS E-2.

Pin	Function
D	Aircraft Ground
E	+28 VDC (Bucket/Hook Open & Torch/Seeder On)

PARTS FOR CONNECTORS 1 THROUGH 6	
Connector on Helicopter (In-Line)	MS3101E24-11S
or (Bulkhead)	MS3102E24-11S
Mating Connector	MS3107B24-11P
Dust Cap for Helo Connector (Optional)	MS25043-24D
Dust Cap for Mating Connector (Optional)	MS25042-24D

The MS numbers for the 9-pin test plug are listed above, and again the schematics can be found at the end of Appendix 7 or on the avionics website.

IV. AUX-FM Provisions. Aux-FM provisions allow the operation of a portable FM radio through an aircraft audio system. It consists of an FM antenna and a 10 pin connector which is interfaced with the aircraft audio control system. The avionics website to view current pin-outs for the 10 pin connector can be found at: http://www.fs.fed.us/fire/niicd/documents



V. Supplemental Radio Kits. Supplemental Radio kits are used to provide enhanced communications features to any fixed wing aircraft. Helicopters do not use Supplemental Radio kits. Supplemental Radio kits can be in any variety of configurations depending on the intended task.

Simple kits would generally be used for Reconnaissance missions so pilots can flight follow with the local dispatch office. These kits could consist of a handheld radio with earphone to a TAC PACK kit. A TAC PACK kit uses an Aeronautical VHF-FM in a portable case. The aircraft provides TAC PACK power. A TAC PACK cannot be substituted for an Air Attack kit.

Complex kits are used for Air Attack missions. National minimum specifications for Air Attack kits are on the avionics web site. Minimally, these kits are required to have:

- One (minimum) or two Aeronautical VHF-FM radios. If only one radio is installed it must have SCAN capability.
- One AUX-FM radio interface connector.
- Separate audio control systems for the pilot and ATGS.

- A remote set of audio/mic jacks (JJ-034/JJ-033) with PTT capability and a volume adjustment for an ATGS instructor at the rear of the kit.
- An ICS system.
- Ability to operate on both +12 and +24 VDC, although not simultaneously.
- A power cord mating to the aircraft's accessory power source.
- Audio (PJ-055) & mic (PJ-068) plugs to interface the kit with the aircraft's audio system.
- Bulkhead mounted female BNC connectors for the kit's FM radio. This is for connection to the aircraft's FM antenna.
- A means to secure the kit while in flight.

VI. Acceptable Radios. The following are pictures of some of the current acceptable VHF-FM radios. Visit http://www.fs.fed.us/fire/niicd/documents for a current list of acceptable VHF-FM radios.

Eureka Radio
ERS-96000NB (analog – acceptable until 12/31/2009)

Communications Specialist TE-64D CTCSS Tone Encoder used with ERS-96000NB

Northern Airborne Technology (NAT)

NPX138N (analog – acceptable until 12/31/2009)

TH250 control head with NTX138N transceiver (analog – acceptable until 12/31/2009)

NPX136D (approval pending) (P25 digital – acceptable for use beyond 2010)

Technisonic Industries

TFM-138B (analog – acceptable until 12/31/2009)

TDFM-136 (P25 digital – acceptable for use beyond 2010)

TFM-500 (analog – acceptable until 12/31/2009)

Wulfsberg Electronics

C-962 control head with RT-9600 transceiver (analog – acceptable until 12/31/2009)

NOTES

Appendix 4
FS-5700-21 & 21a Forms Explanation

This appendix will cover the airplane and helicopter inspection forms FS-5700-21 and 21a along with giving some specifics on how to fill out the form and what to look for while inspecting an aircraft. The Excel version of the form has comment fields (see the end of Chapter 10 for an example

FS-5700-21 Airplane Data Record
Front Side

Header Information

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

This information can be found in the contract. The contract number will be shown on the front page of the contract. The only items that you may question are Item 3 - Designated Base and Item 4 – Region/Area. You should enter in these blocks where the aircraft is contracted for, or in the case of a CWN type aircraft, its home station.

Section I - Operator & Aircraft Information

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 Inspection
FOR EMPTY WEIGHT SEE CURRENT WEIGHT AND BALANCE DATA			
11. Authorized Uses *(X appropriate boxes)* a. ☐ Passenger b. ☐ Cargo c. ☐ Fire Surveillance/Reconnaissance d. ☐ Air Attack (TYPE _____) e. ☐ Equipped w/Autopilot *(Single Pilot IFR)*	Expires *(Fill in the blank)*: _____ f. ☐ Approved MEL g. ☐ Other _____ h. ☐ Other _____ i. ☐ Other _____ j. ☐ Other _____		
12. Approved By *(Signature)*	13. Title	14. Region/Area	15. Date

Item #

1-6 Self-explanatory
7 Certificated Gross Weight from the Aircraft Flight Manual
8-10 Self-explanatory
11a-j Initial Blocks as required per the contract **(Line through items not authorized)**
11c-d Per the contract and the National Avionics standards and enter Type I, II,II, or IV
11e If approved per Operators Ops Spec A015
11f If approved per Operators Ops Spec D095
11g-j For additional authorized uses not listed
12-15 Self-explanatory

Section II - Airframe Information

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

1. Total Airframe Time _____
2. Date of Last Annual/Complete Phase Cycle Insp _____
3. Total Time Last 100-Hr/Phase Insp _____Date: _____
4. On "Approved" Maintenance Program _____
5. Airworthiness & Registration _____
6. Date of Last Actual Weighing _____

   Empty Weight _____
7. Flight Manual Rev. No._____Date:_____
8. Maintenance Records _____
9. Flight Instruments *(Condition)* _____
10. Engine Instruments *(Condition)* _____

Item #

1-3 Self-explanatory
4 Enter "AAIP", "100/Annual", "Progressive", etc., as applicable (AAIP must be approved on D073 of Ops Specs)
5 Verify in aircraft
6 Self-explanatory (2 years for most contracts, or as required by FAR's)
7 Self-explanatory
8-10 Check condition and review records

Section III - Engine Information

SECTION III – Engine Information *(Fill in the Blanks)*

1. Make and Model _____
2. Hours Since New or O/H #1 _____ #2 _____

   TBO _____ HSI _____
3. Hours Since H.S.I. #1 _____ #2 _____
4. Prop Hours Since New or O/H #1 _____ #2 _____

   TBO _____ GOV TBO _____
5. Maintenance Records #1 _____ #2 _____

Item #

1-4 Self-explanatory – Overhaul, TBO's & HSI times (Verify against Ops Specs D101)
5 Review records

Section IV – Operating Certificates

SECTION IV – Operating Certificates *(Fill in the Blanks)*
1. 14 CFR 135 Certificate No. _____
2. 14 CFR 137 Certificate No. _____
_____
_____

Self-explanatory - Certificate Numbers have four specific elements. The first three alphanumeric characters are unique and designate a specific operator. **The fourth letter is always a letter, either "A" for Air Carrier, or "G" for Agricultural operator.** 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.

Section V – Equipment

SECTION V – Equipment *(X appropriate boxes)*					
	Satisfactory			Satisfactory	
	Yes	No		Yes	No
1. Hobbs Installation			12. Skis/Wheel-Skis		
2. Free Air Temperature Gauge			13. Floats *(Size:_____)*		
3. Seat Belt *(All)*			14. Navigation Charts/Approach Plates		
4. Shoulder Harness *(Front)*			15. Shooting Door/Window		
5. First Aid Kit			16. Shoulder Harness w/Inertia Reel *(Rear)*		
6. Survival Kit			17. High Visibility Markings		
7. Fire Extinguisher			18. HAZMAT Handbook*(Current Exemption Letter)*		
8. Light – Navigation/Landing			19. Procurement Document in Aircraft		
9. Strobes and/or Beacon *(Anti-Collision)*			20. Additional Items_____		
10. De-ice/Anti-ice Equipment			21. Security Devices		
11. Cabin Heater			1. _____		
			2. _____		
			3. Incorporated into Preflight checklist		

Item #

1-2 Self-explanatory (In some contracts a tachometer only is not acceptable and instead require a hobbs meter be installed)

3 Check for condition and proper approvals/tags (TSO C22 or C114)

4 Although not necessarily required by the FAA, this is a minimum requirement for all aircraft used by the Forest Service. Shoulder harnesses are not required to have a TSO number/tag, but must be inspected and the inertia reels operationally checked.

5 Required for all aircraft (A list of items normally required can be found in the National Type I & II Helicopter CWN contract)

6 Usually required for all Special Mission aircraft (A list of items normally required can be found in the National Type I & II Helicopter CWN contract)

7 Verify charge, security of mounting and Annual/Hydro (6 year) dates **(per D104)**

8-11 Check for operation and verify against special lighting requirements in contract

12-16 Self-explanatory (These items are either required by contract or dependent on the type mission involved)

17 This is normally a judgment call on the inspector's part unless a specific requirement exists in the contract)

18 Generally required for all special mission aircraft (Verify that the current DOT Exemption Letter is with the book)

19 Required by contract

20 For additional equipment required by contract

21 Must be two independent electrical and/or mechanical devices, and must be incorporated into the preflight checklist. Locking windows or doors are not acceptable.

FS-5700-21 (Back Side)

Section VI – Avionics

SECTION VI –Avionics *(X appropriate boxes)*					
	Satisfactory			Satisfactory	
	Pass	Fail		Pass	Fail
1. ELT – Due Date of Battery _____			26. Automated Flight Following		
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 Cord		
6. # 1 VHF-FM Comm. Transceiver (*Type*)			31. Transceiver 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 _____ Interphone 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, Diagrams & Schematics		
15. #2 VOR/LOC *(IFR 30 Day Due _____)*			40. Accessory Power (3 Pin)		
16. Glideslope			41. Supplementary Radio Kit Capability		
17. Marker Beacon			42. Other _____		
18. DME or TACAN			43. Other _____		
19. ADF or IFR Substitute			44. Other _____		
20. Magnetic Compass Placard (Per 23.1547)			45. Other _____		
21. Cockpit Voice Recorder			46. Other _____		
22. Flight Data Recorder			---		
23. TAWS/GPWS			47. Avionics Inspection Completed By:		
24. TCAS/TCAD			_____		
25. Autopilot w/Flight Director For Single Pilot					

Item #

1	Due Date of Battery
2	Verify annual inspection complied with per FAR 91.207d(1-4)
3	Enter which TSO 91a or 126 (Required after 01/31/2009)
4-5	Check operation (720 or 760 channel radio can be determined by the highest frequency that can be selected 720 – 135.975 and 760 – 136.975) (After January 1, 2005 at least one 760 channel radio required)
6-8	Check operation and identify type
9	Verify 10-pin connector operation and number of antennas based on Special Mission aircraft approved for.
10	Identify whether handheld or panel mounted, and whether IFR or VFR certified (Air Attack Type I & II must be panel mounted)
11	Enter expiration date (Under no circumstances can it be more than 1 year old)
12-14	Self-explanatory (If required check VOR/LOC for operation)
16-19	Check for operation if installed and per contract requirements
20	Placarded per FAR 23.1547
21-22	As required per the contract (verify battery due dates, beacon (ping) check, etc.)
23	For a breakdown of the various TAWS requirements and modes see the end of Appendix 7.
24	As required per the contract.
25	Verify against Operators Ops Spec A015
26-36	Self-explanatory, as required by contract (verify operation as required)
37-39	Self-explanatory
40	Verify power and polarity
41	Verify space available to install kit
42-46	Space to insert other required equipment
47	Self-explantory

FS-5700-21a Helicopter Data Record

Front Side

Header Information

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

This information can be found in the contract. The contract number is shown on the front page. The only items that you may question are Item 3 - Designated Base and Item 4 – Region/Area. You should enter in these blocks where the aircraft is contracted for, or in the case of a CWN type aircraft, its home station.

NOTE: Don't forget to stamp "INTERGAENCY FIRE" if applicable.

Section I - Operator & Aircraft Information

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 Cert Gross Weight *(Internal)*	9. Max Cert Gross Weight *(External)*	10. No. of Passengers	11. Type Fuel	12. Fuel Flow *(Cruise)* G.P.H	
FOR EMPTY WEIGHT SEE CURRENT WEIGHT AND BALANCE DATA					
13. Authorized Uses *(X appropriate boxes)* Expires *(Fill in the blank)*: _____					
a. ☐ **Passenger & Cargo** **b.** ☐ **Low-Level Reconnaissance** **c.** ☐ **Cargo Only** **d.** ☐ **External Load *(Sling)*** **e.** ☐ **Rappelling** **f.** ☐ **Aerial Ignition** **g.** ☐ **Manager May Ride (Type I)**	**h.** ☐ **Fire Suppression – Interagency** **i.** ☐ **Fire Suppression – Local** **j.** ☐ **Water/Retardant Bucket** **k.** ☐ **Helitanker *(Fixed Tank)*** **l.** ☐ **Longline/Remote Hook** **m.** ☐ **Rapid Refuel *(CCR or Splash)*** **n.** ☐ **Air Attack (Type_____)**	**o.** ☐ **Approved for Left Seat Ops** **p.** ☐ **Approved MEL** **q.** ☐ **Other** _____ **r.** ☐ **Other** _____ **s.** ☐ **Other** _____ **t.** ☐ **Other** _____ **u.** ☐ **Other** _____		
14. Approved By *(Signature)*	15. Title	16. Region/Area	17. Date		

Item #

1-7 Self-explanatory
8-9 Certificated Gross Weights (internal/External) from the Aircraft Flight Manual
10-12 Self-explanatory
13a-u Initial Blocks as required per the contract **(Line through items not authorized)**
13g For Standard Category Type 1 Aircraft ONLY **(NOT applicable to Restricted Category Aircraft)**
13m Initial and circle type rapid refuel as required (Closed Circuit Refuel or Splash) **(Verify procedure listed in Operations Manual)**
13n Per the contract and the National Avionics standards (Enter Type I, II, III) (Never Type IV as there is insufficient room for an Air Attack Kit in cockpit)
13o Initial if approved by STC and Flight Manual Supplement in Flight Manual
13p If approved per Operators Ops Spec D095
13q-u For additional authorized uses not listed
14-17 Self-explanatory

Section II - Airframe Information

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

1. Total Airframe Time _____
2. Date of Last Annual/Phase Inspection _____
3. Last Inspection Type _____ Time: _____
4. On "Approved" Maintenance Program _____
5. Airworthiness & Registration _____
6. Date of Last Actual Weighing _____

   Equipped Weight _____ Bid Weight _____
7. Flight Manual Rev. No. _____ Date: _____
8. Time Change & A.D. List _____
9. Maintenance Records _____
10. Flight Instruments *(Condition)* _____
11. Engine Instruments *(Condition)* _____

Item #

1-3 Self-explanatory
4 Enter "AAIP", "100/Annual", "Progressive", etc., as applicable
(AAIP must be approved on D073 of Ops Specs)
5 Verify in aircraft
6 Self-explanatory (2 years for most contracts, or as required by FAR's)
(Enter Bid Weight from section B of contract and verify Equipped Weight does not exceed Bid Weight by more than 1%)
7 Self-explanatory
8 Review and verify current listings available
9-11 Check condition and review records

Section III - Engine Information

SECTION III – Engine Information *(Fill in the Blanks)*

1. Make and Model _____
2. Total Time #1 _____ #2 _____
3. Hours Since O/H #1 _____ #2 _____

   TBO _____ **HSI** _____
4. Hours Since H.S.I. #1 _____ #2 _____
5. Maintenance Records #1 _____ #2 _____

Item #

1-4 Self-explanatory – Overhaul, TBO & HSI times (Verify against Ops Specs D102)
5 Review records

Section IV – Operating Certificates

SECTION IV – Operating Certificates *(Fill in the Blanks)*
1. 14 CFR 133 Certificate No. _____
Expiration Date _____
2. 14 CFR 135 Certificate No. _____
3. 14 CFR 137 Certificate No. _____

Self-explanatory. **Part 133 Certificates are good for a maximum of 2 years.** Verify that an Ops Manual is on board the aircraft. Certificate Numbers have four specific elements. The first three alphanumeric characters are unique and designate a specific operator. **The fourth letter is always a letter, either "A" for Air Carrier, "G" for Agricultural operator or "L" for Rotorcraft External - Load operator.** 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.

Section V – Equipment

NOTE: ITEMS IN RED ARE REQUIRED FOR INTERAGENCY FIRE

SECTION V – Equipment *(X appropriate boxes)*					
Satisfactory			Satisfactory		
	Yes	No		Yes	No
1. Hobbs Installation **			15. Personnel Access Step **		
2. Free Air Temperature Gauge **			16. Water/Retardant Bucket ** (** Either 16 or 17)		
3. Seat Belt *(All)* **			Type _____ Gallons _____		
4. Shoulder Harness ** *(All after 01/01/06)*			17. Fixed Retardant Tank **		
5. First Aid Kit **			Type _____ Gallons _____		
6. Survival Kit **			18. Bucket/Door SW on Collective **		
7. Dual Control *(For Pilot Check)* **			19. Tundra or Snow Pads		
8. Lighting – Night Operation **			20. Litter Kit *(No. of Litters _____)*		
9. High Visibility Marking Main Rotor**			21. Closed Circuit Refueling		
10. Extended Height Gear **			22. Defuel Capability		
11. Convex Mirror **			23. Rappel Anchor*(Last Inspected_____)*		
12. Locking Fuel Cap			24. Auxiliary Fuel Tanks/Extender		
13. Cargo Hook ** *(Last Inspected_____)*			25. Baggage Compartment or Cargo Racks **		
14. Long-Line – Remote Hook *(last Inspected _____)*			26. Baggage Compartment Mod. **		
			27. Fire Extinguisher **		

Item #

1-2 Self-explanatory
3 Check for condition and proper approvals/tags
4 Self-explanatory
5 Required for all aircraft (A list of items normally required can be found in Section J of the National Type I & II Helicopter CWN contract)
6 This is Required for All Aircraft. Shoulder harnesses are not required to have a TSO number/tag, but must be inspected and the inertia reels operationally checked. After 01/01/2006 all positions will require shoulder harnesses.
7 As required by the contract
8 Self-explanatory (Verify against contract requirements)
9 Self-explanatory (Check National Type I & II Section J for approved paint schemes)
10-12 Self-explanatory (As required by contract)
13 Enter date last inspected (Normally required every 2 years, or as required by the contract)

14 Verify number and length of longlines required by the contract and enter date Remote Hook last inspected (Normally required every 2 years, or as required by the contract). If Synthetic Longline enter data required by Section VII.
15 Self-explanatory (As required by contract)
16-17 Enter type and capacity (Hook up buckets and verify at least 6 inch clearance from tail rotor)
18-22 Self-explanatory (18 required for all, and as required by contract for others)
23 Verify anchor inspected in accordance with Instructions for Continued Airworthiness (ICA)
24-26 Self-explanatory (As required by contract)
27 Verify charge, security of mounting and Annual/Hydro (6 year) dates **(per D104)**

FS-5700-21a (Back Side)

Section V – Equipment (Cont.)

	Satisfactory			Satisfactory	
	Yes	No		Yes	No
28. Particle Separator			36. HAXMAT Book (*w/Current Exemption Letter)*		
29. Engine Reignition Kit			37. Procurement Document in Aircraft		
30. Battery, Auxiliary or H.D.			38. Security Devices		
31. Heater, Type _____			1. _____		
32. Main Rotor Brake			2. _____		
33. Wire Cutter			3. Incorporated into preflight checklist		
34. White Strobe **			39. Other _____		
35. Operations Manual in aircraft			40. Other _____		
			41. Other _____		

Item #

28-34 Self-explanatory (Verify requirements against contract)
35 Required by contract and FAR 135.21(f)
36 Verify that the current DOT Exemption Letter is with the book
37 Required by contract
38 Must be two independent electrical and/or mechanical devices, and must be incorporated into the preflight checklist. Locking windows or doors are not acceptable.
39-41 Space to insert other required equipment

Section VI – Service Truck

SECTION VI – Service Truck *(X appropriate Boxes)*					
	Satisfactory			Satisfactory	
	Yes	No		Yes	No
1. Capacity ** _____U.S. Gallons			13. Fuel Hoses *(approved Type)* **		
2. Type Truck _____			14. Mechanized Reel		
3. License No. _____			15. Ground & Bonding Cables **		
4. Condition			16. Fuel Filtering System **		
5. Fire Extinguishers (2 each 20-B,C) **			17. Date Filter Changed ** _____		
6. Placarded – 49 CFR 172 **			18. Spare Filters **		
7. Marked w/Type Fuel – 3 Inch Letters **			19. Gas Engine Protection		
8. No Smoking Signs – 3 Inch Letters **			20. FM Radio		
9. Sump & Drain **			21. Spill Kit ** (_____ Gallons Minimum)		
10. Fuel Meters **			22. Filter Manufacturer's Manual		
11. Differential Pressure Gauge(s) **			23. Record for recording sump draining **		
12. Nozzle Screen/Dust Cap **			24. Other _____		

Item #

1-3 Self-explanatory
4 General condition, cleanliness, security of tank(s), etc. (No leaks are allowed)
5 Verify quantity and capacity against contract (Normally minimum 2 each with a rating of 20-B:C) (See NFPA 10 Standards for Portable Fire Extinguishers)
6 Verify four-sided "1863" placard, on both sides and back of tank
7-8 Placarded on three sides
9 Check sample (clean and clear)
10-12 Self-explanatory (100 mesh or finer screen in fuel nozzle and dust cap installed)
13 See current contract language for requirements and eligible types
14 If required by contract
15 In accordance with NFPA 407 and the contract
16-18 As required by contract (Some contracts require the filter to be changed at time of carding, others require filter to be changed at the manufacturer's recommended times) (Usually one spare filter is required)
19 Shielded ignition and approved spark arrestor muffler
20-22 As required by contract
23 Self-explanatory (Should also include fuels servicing log)
24 For additional required equipment or checks

NOTE: Many of the items listed in Section VI are required by contract. However, there may be additional federal, state and local laws vendors are required to comply with in accordance with 49 Code of Federal Regulations (CFR). 49 CFR 171.1 pertains to fuel trucks under contract to the federal government.

Section VII – Avionics

SECTION VII –Avionics Systems *(X appropriate boxes or annotate N/A for Items Not Required)*						
	Satisfactory				Satisfactory	
	Pass	Fail			Pass	Fail
1. ELT – Due Date of Battery _____			19. Audio Controls ** *(No._____)*			
2. ELT 91.207 Complied With			20. Transmitter Selectors			
3. ELT TSO ** 91a ( ) 126 ( )			21. Receiver Selectors			
4. # 1 VHF-AM Comm. Transceiver ** (720 760)			22. Microphone/Drop Cord (U-92A/U **)			
5. # 2 VHF-AM Comm. Transceiver (720 760)			23. Transceiver PTT			
6. # 1 VHF-FM Comm. Transceiver** *(Type _____)*			24. Rappel Audio Control & Drop Cord			
7. # 2 VHF-FM Comm. Transceiver *(Type_____)*			25. ICS Hot Mic/VOX (Pilot/Copilot **)			
8. Aux FM Provisions **			26. ICS PTT **			
9. GPS or Loran *(Panel Mounted**/ - Handheld)*	Panel	Hand	27. Rear Seat PTT (2 Aft Cabin Exits **)			
(Mark IFR / VFR As Applicable)	IFR	VFR	----------			
10. GPS Database *(expiration Date_____)*			28. Avionics Placarding			
11. Transponder ** (Per 91.413)*(Due Date_____)*			29. General Condition			
12. Altimeter/Static ** (Per 91.411)(Due Date_____)			30. Avionics Records, Diagrams & Schematics			
13. Magnetic Compass Placard (Per 27.1547)			31. Accessory Power (3 Pin) **			
14. TCAS/TCAD			32. Cargo Hook Connector (9 pin) **			
15. Automated Flight Following			33. Other _____			
16. Other _____			34. Other _____			
17. Other _____			35. Other _____			
18. Other _____			36. Other _____			
			----------			
			37. Avionics Inspection Completed By:			
			_____			

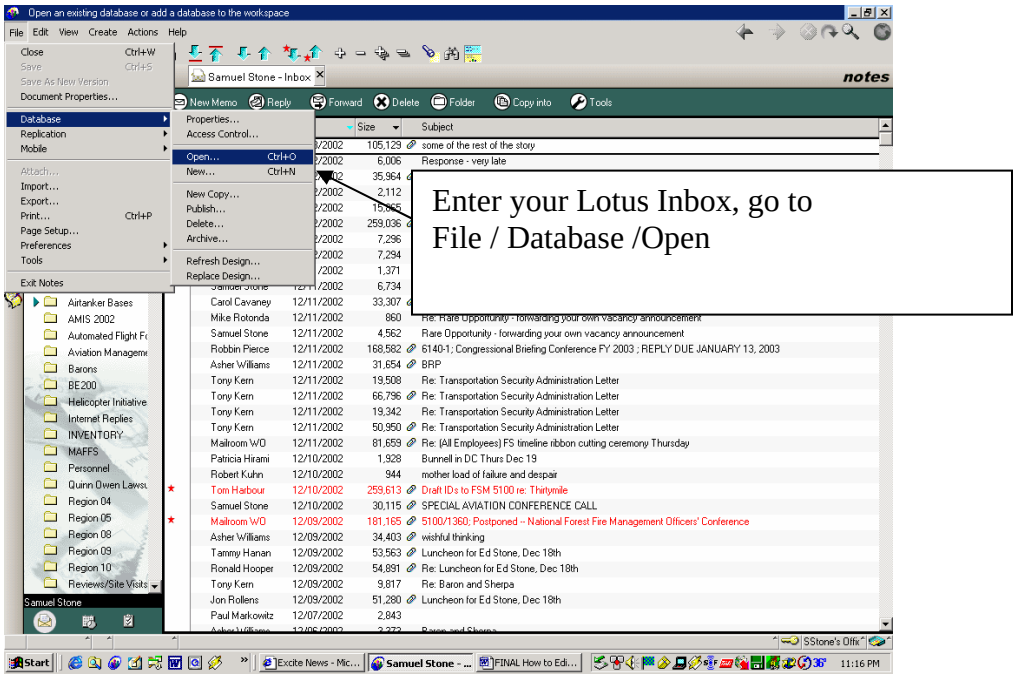
Item #

1	Due Date of Battery
2	Verify annual inspection complied with per FAR 91.207d(1-4)
3	Enter which TSO 91a or 126 (Required after 01/31/2009)
4-5	Check operation (720 or 760 channel radio can be determined by the highest frequency that can be selected 720 – 135.975 and 760 – 136.975) (After January 1, 2005 at least one must be a 760 channel radio)
6-7	Check operation and identify type
8	Verify 10-pin connector operation and VHF-FM antenna installed
9	Identify whether handheld or panel mounted, and whether VFR or IFR certified (Air Attack Type I & II must be panel mounted)
10	Enter expiration date (Under no circumstances can it be more than 1 year old)
11-12	Self-explanatory
13	Placarded per FAR 27.1547
14-18	As required per the contract
19-27	Self-explanatory (verify operation as required)
28-30	Self-explanatory
31	Verify power and polarity
32	Verify polarity and power, and protected by 50 amp circuit breaker
33-36	Space to insert other required equipment
37	Self-explanatory

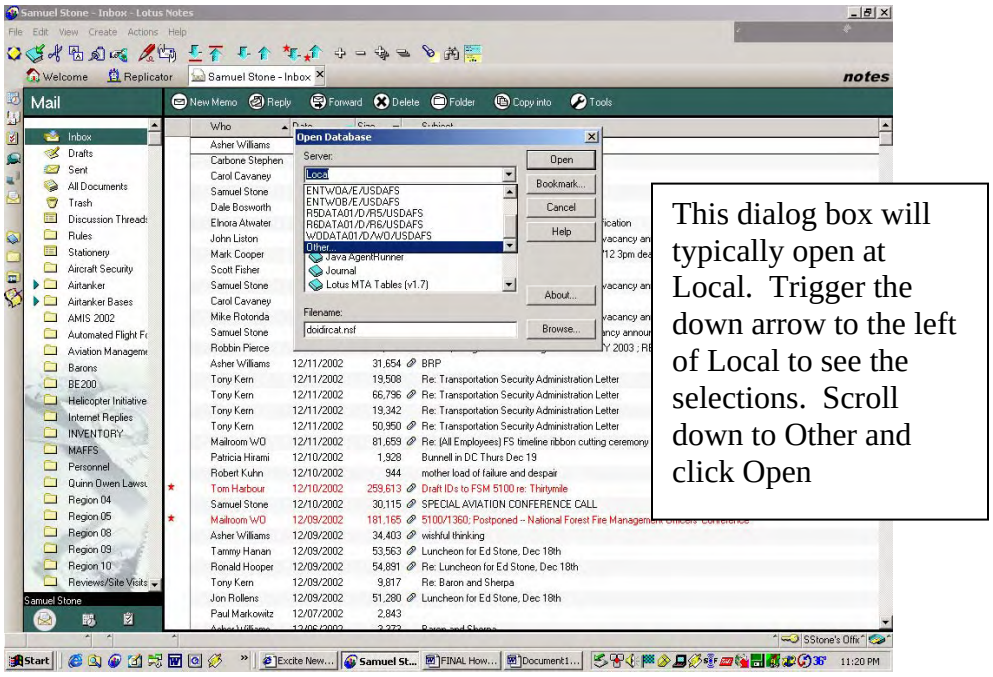
Appendix 5

National Maintenance Database Set-up

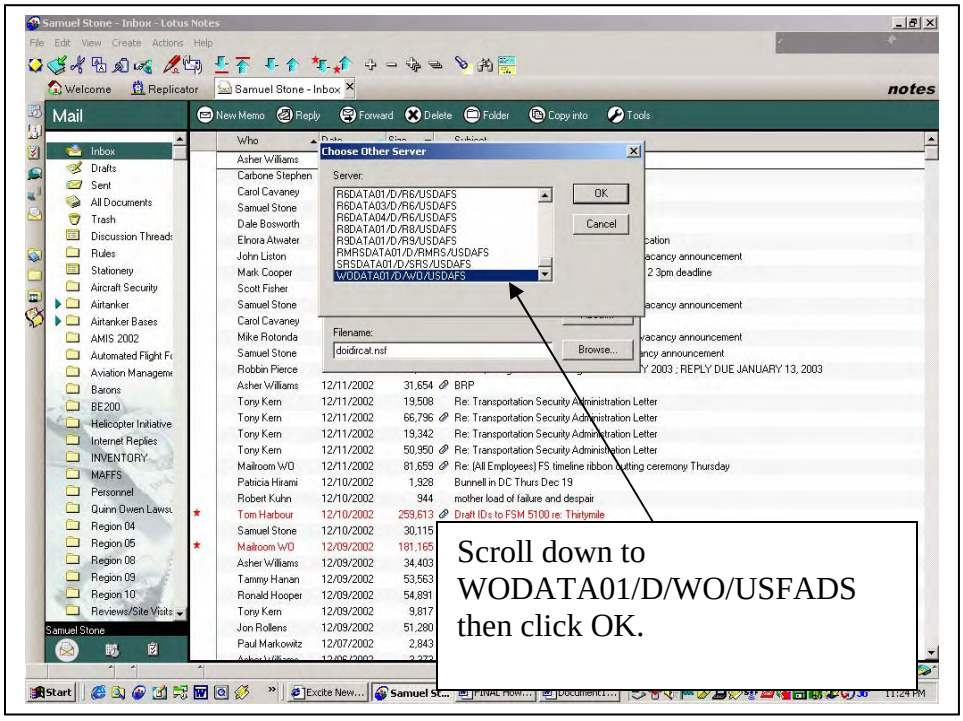
Page 1.



Page 2.



Page 3.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Server:
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R6DATA03/D/R6/USDAFS
R6DATA04/D/R6/USDAFS
R8DATA01/D/R8/USDAFS
R9DATA01/D/R9/USDAFS
RMRSDATA01/D/RMRS/USDAFS
SRSDATA01/D/SRS/USDAFS
WODATA01/D/WO/USDAFS
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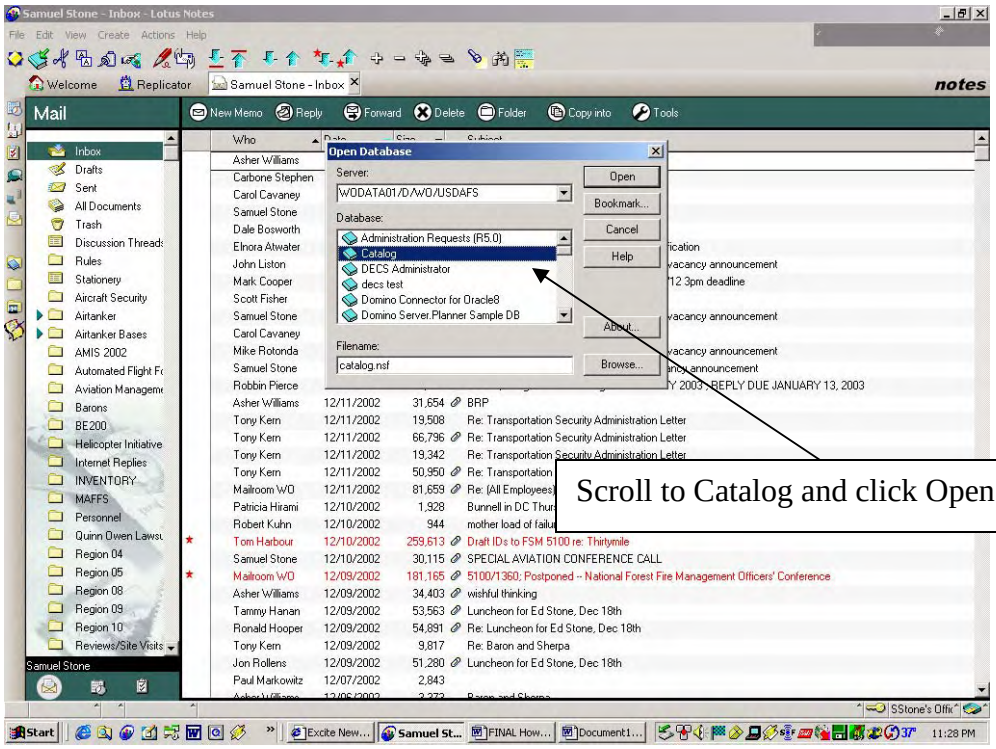
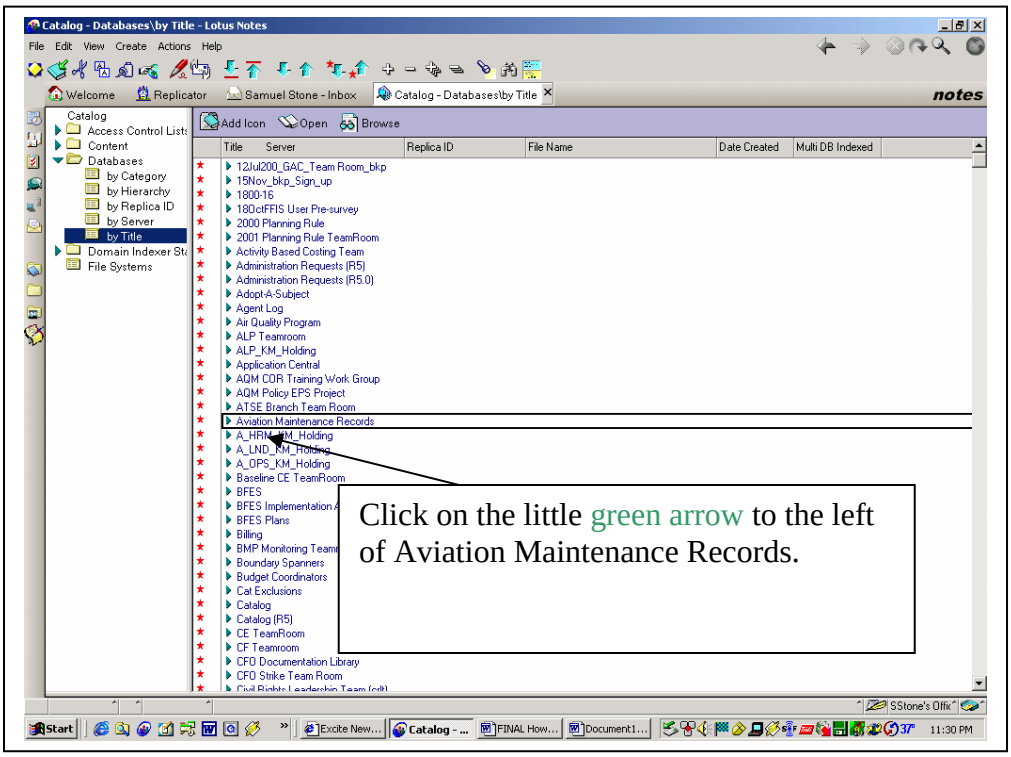
Cancel
Filename:
doidircat.nsf
Browse...
Scroll down to WODATA01/D/WO/USFADS then click OK.

Page 4.


Open Database
Server:
WODATA01/D/WO/USDAFS
Database:
Administration Requests (R5.0)
Catalog
DECS Administrator
decs test
Domino Connector for Oracle8
Domino Server.Planner Sample DB
Open
Bookmark...
Cancel
Help
About...
Filename:
catalog.nsf
Browse...
Scroll to Catalog and click Open

Page 5.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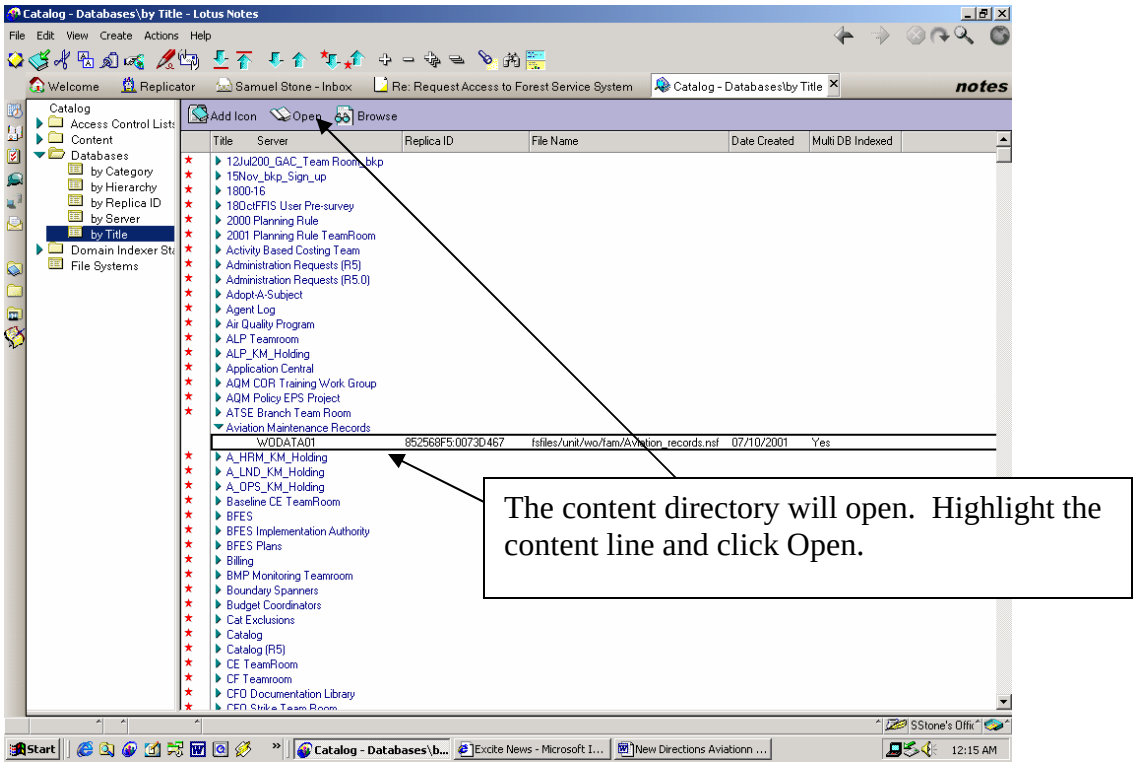
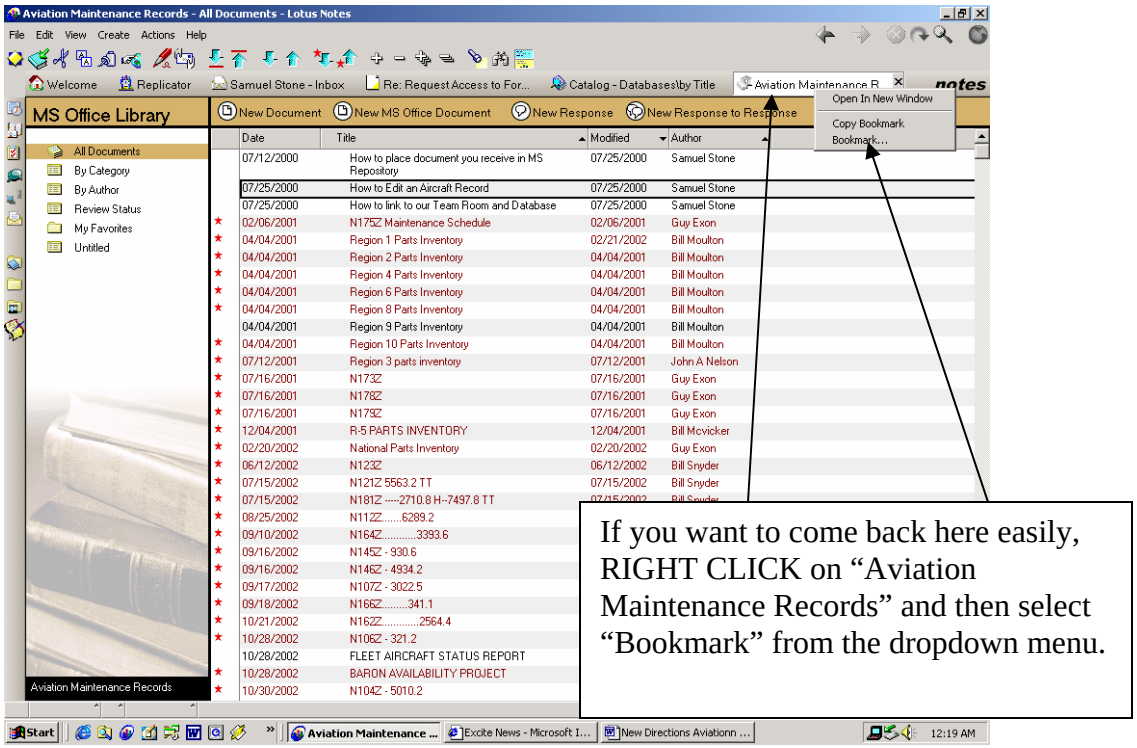
Page 6.


Catalog - Databases\by Title - Lotus Notes
The content directory will open. Highlight the content line and click Open.


Aviation Maintenance Records - All Documents - Lotus Notes
File Edit View Create Actions Help
Welcome
Replicator
Samuel Stone - Inbox
Re: Request Access to For...
Catalog - Databases\by Title
Aviation Maintenance R...
notes
MS Office Library
New Document
New MS Office Document
New Response
New Response to Response
Open In New Window
Copy Bookmark
Bookmark...
All Documents
By Category
By Author
Review Status
My Favorites
Untitled
Aviation Maintenance Records
Date
Title
Modified
Author
07/12/2000 How to place document you receive in MS Repository 07/25/2000 Samuel Stone
07/25/2000 How to Edit an Aircraft Record 07/25/2000 Samuel Stone
07/25/2000 How to link to our Team Room and Database 07/25/2000 Samuel Stone
02/06/2001 N175Z Maintenance Schedule 02/06/2001 Guy Exon
04/04/2001 Region 1 Parts Inventory 02/21/2002 Bill Moulton
04/04/2001 Region 2 Parts Inventory 04/04/2001 Bill Moulton
04/04/2001 Region 4 Parts Inventory 04/04/2001 Bill Moulton
04/04/2001 Region 6 Parts Inventory 04/04/2001 Bill Moulton
04/04/2001 Region 8 Parts Inventory 04/04/2001 Bill Moulton
04/04/2001 Region 9 Parts Inventory 04/04/2001 Bill Moulton
04/04/2001 Region 10 Parts Inventory 04/04/2001 Bill Moulton
07/12/2001 Region 3 parts inventory 07/12/2001 John A Nelson
07/16/2001 N173Z 07/16/2001 Guy Exon
07/16/2001 N178Z 07/16/2001 Guy Exon
07/16/2001 N179Z 07/16/2001 Guy Exon
12/04/2001 R-5 PARTS INVENTORY 12/04/2001 Bill Mcvicker
02/20/2002 National Parts Inventory 02/20/2002 Guy Exon
06/12/2002 N123Z 06/12/2002 Bill Snyder
07/15/2002 N121Z 5563.2 TT 07/15/2002 Bill Snyder
07/15/2002 N181Z ----2710.8 H--7497.8 TT
08/25/2002 N112Z.....6289.2
09/10/2002 N164Z.....3393.6
09/16/2002 N145Z - 930.6
09/16/2002 N146Z - 4934.2
09/17/2002 N107Z - 3022.5
09/18/2002 N166Z.....341.1
10/21/2002 N162Z.....2564.4
10/28/2002 N106Z - 321.2
10/28/2002 FLEET AIRCRAFT STATUS REPORT
10/28/2002 BARON AVAILABILITY PROJECT
10/30/2002 N104Z - 5010.2
If you want to come back here easily, RIGHT CLICK on “Aviation Maintenance Records” and then select “Bookmark” from the dropdown menu.
Start
Aviation Maintenance ...
Excite News - Microsoft I...
New Directions Aviationn ...
12:19 AM

Appendix 6

Definitions, Abbreviations, Acronyms and Terms

I. Definitions

Aerial Supervisory Module (ASM) – Contracted aircraft with an agency Leadplane certified pilot and an ATGS. These aircraft are operated in the dual role of Tanker Lead and Air Attack.

Air Attack – These are normally contract fixed wing aircraft piloted by a vendor pilot with an agency Air Tactical Group Supervisor (ATGS) on board to co-ordinate airspace usage. There are four categories of Air Attack aircraft; Type I, II, III, IV. The category is determined by the avionics configuration of the aircraft. Refer to the Avionics Chapter 8 to determine the difference between the four.

Bell 205++ (plus-plus)

There are several variants of the Bell 205 encountered in the fire fighting arena. Terms used are 205, 205+ (plus), and 205++ (plus-plus). The determination of which type Bell 205 is based on which STC(s) the aircraft has. The following is a short synopsis of what each STC consists of, and how to determine what designation an aircraft would have. For the purposes of this discussion a 205+++ (plus-plus-plus) is added to emphasize a performance issue related to aircraft with and without, the 9 or Less Passenger STC **SH5977NM. A word of caution, there is no such thing as a 205+++. It is only discussed in this manner so that inspectors will understand that a performance issue exists for these aircraft with regard to STC SH5977NM.**

STC SH5132NM 212 Rotor Blades

STC SH2394NM T5317A or T5317B engine

STC SH5976NM Rotor System (**SH5132NM**) & T5317A or T5317B (**SH2394NM**)

STC SH5977NM 9 or Less Passenger

205+	205++	205+++
SH2394NM	SH2394NM SH5132NM **OR** SH5976NM	SH2394NM SH5132NM **OR** SH5976NM **AND** SH5977NM

An aircraft modified with the 212 Rotor System and the -17 engine is identified as a Bell 205++. However, **without** also having STC **SH5977NM** for 9 or Less Passengers, the aircraft will suffer from a substantial performance penalty, compared to one **with** the 9 or Less STC. Using the Takeoff and Landing Limitations Charts in the Flight Manual Supplement for a Bell 205++, an aircraft without the additional 9 or Less STC, will experience a decrease of approximately 1000 pounds in its takeoff and landing gross weight, compared to an aircraft with the 9 or Less STC.

Bell 212 HP (High Performance)

There are two "versions" of the 212HP. However, as far as the Forest Service is concerned there is only one "real" 212HP. Only aircraft configured in accordance with Bell Technical Bulletin 212-91-138, Revision C, with **both** Flight Manual Supplements 29 and 35 are true high performance Bell 212's. Aircraft without the Tail Rotor Kit **(SI 212-68)** are not eligible for the increased Weight, Altitude and Temperature **(WAT)** provided in Flight Manual Supplement 35. A short description of this configuration is provided below.

Transmission & Mast Assembly	212-540-002-101
Transmission Assembly	212-540-002-103
Mast Assembly	212-540-002-105 or 204-040-336-113 212-540-002-111
Intermediate Gearbox	212-540-002-105 or 212-040-003-023
Tail Rotor Gearbox	212-510-001-107 or 212-040-004-009

The Main Rotor head requires installation of improved stainless steel yoke. (P/N 212-011-102-109).
The pylon structure requires a minor modification.
The **Torque Indicators** redline is increased from 100% to 104.3%.
An **Engine Beep Trim System** is added.
Flight Manual Supplement BHT-212-FMS-29 increases the 5 minute takeoff horsepower rating.
Flight Manual Supplement BHT-212-FMS-35 provides an increased Weight, Altitude and Temperature (WAT) Chart, when **both Tail Rotor Hub/Blade Assembly Kit and Increased Horsepower Kit** are installed.

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. To determine if a contract should be an End Product or Flight Services (see next item) Contract, use the table on the following page. (Reference FSM 5711.21)

END PRODUCT CONTRACT MATRIX

If the answer is YES to any question below you must use the flight services process and contract. If the answers are NO, you may use the end-product contract.	Aerial photo remote sensing	Aerial application (spray/seed)	Aerial Ignition	Animal capture (net gun, dart, paintball, etc.)	Animal herding/gathering	Your project *
[1] Are agency personnel going to be on the aircraft for this mission?						
[2, 10] Is the aircraft currently being used as a public aircraft?						
[3] Is a helicopter manager required for this mission?						
[4] Is a "chief of party" or "flight manager" required for this?						
[5] Are you asking or requiring (written or verbal) the pilot/crew to wear PPE?						
[6] Are you asking for aircraft and pilot requirements (i.e. Cessna 206, or pilot must have PPE and Flight helmet)?						
[7] Are you requiring "pilot standards"?						
[8] Are you directing aircraft maintenance?						
[9] Are you controlling or directing aircraft "movement" (telling the aircraft where to go, how to do the project, how often to check in)?						
[10] Are you requesting exclusive control? Is the aircraft already under Government contract?						

* This may include incidental use of aircraft for various missions not identified in the exhibit. When evaluating such missions, local or regional aviation managers can assist in making decisions on type of procurement to use.

[1] Agency personnel are assuming operational control of the mission from the aircraft.
[2] Public aircraft is defined in FSM 5705.
[3] Helicopter Manager requirements are listed in the Interagency Helicopter Operations Guide (IHOG).
[4] Chief of party or Flight Manager requirements are listed in FSH 5709.16.
[5] Requiring personal protective equipment (PPE) assigns operational control to the Forest Service. This is a vendor decision for an end-product contract.

[6] Asking for these requirements assumes operational control by the Forest Service. This is a vendor decision for an end-product contract.
[7] By placing "pilot standards" (for example, a pilot must have minimum 50 hours in make/model aircraft to be flown) the Forest Service is not only asking for an aircraft to perform the mission, it is also assuming "operational control." The vendors place their own controls on the mission for the end-product contract.
[8] By directing aircraft maintenance (verbal or written) the Forest Service assumes "operational control." This is a vendor decision for an end-product contract.
[9] Controlling or directing aircraft "movement" assumes operational control by the Forest Service. For an end-product contract, simply state that the project starts by X date and finishes by Y date. Have vendor call before the start of the project and notify dispatch (to warn other aircraft working on forest/unit).
[10] The aircraft cannot be under the exclusive control of the government for an end-product contract. For example:

a. Under an end-product contract, NEVER use any flight services contracted aircraft, such as an exclusive use or Call When Needed (CWN) helicopter, that is currently working under that contract. However, if the helicopter is released from contract, the end-product contractor could hire the same vendor to perform the end-product service.

b. Under an end-product contract, participation by Forest Service employees is limited to end-product contract administration only.

c. Forest Service Grants of Exemption (defined in FSM 5710.5; for extensive direction, see FSM 5714) from the Department of Transportation, Federal Aviation Administration (FAA) regulations, do not apply to end-product contracts. If departures from applicable regulations are necessary, the contractor is responsible for obtaining them.

Engine Health Monitoring

Topping Check – Bell UH-1 Helicopter

- The Topping check is performed to determine maximum engine power output (Torque) when maximum fuel flow is demanded from the fuel control. The pilot will climb the aircraft to the highest obtainable altitude and confirm that the maximum torque is available without exceeding any engine limits. The engine must provide at least maximum torque per the aircraft charts without N2 bleed or exceeding limitations. The pilot is looking at N1, Torque, EGT/TGT, OAT, and PA during this check.

Turbine Engine Analysis Check (TEAC) – Bell UH-1 Helicopter

- The purpose of the TEAC check is to systematically check and verify engine/aircraft indicating systems and overall engine performance. In conjunction with the Topping check these checks will establish a performance base-line in which engine performance may be checked.

Health Indicator Test (HIT) – UH-1 Helicopter

- 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 off of information established from the aircraft Topping check and TEAC check. The pilot uses N1, OAT, and EGT/TGT for this check.

Power Checks

- Power checks are used to see how much Torque the aircraft engine will produce without exceeding engine limitations.

- The Bell 206 series aircraft uses OAT, TOT, Pressure Altitude (PA) – Ft., and Percent Torque (N2). The pilot performs the power check while flying straight and level at the maximum airspeed attainable within engine and airframe limits. If the actual reading of percent torque is the same or greater than the chart percent torque the aircraft can achieve the performance as stated in the charts. If the percent torque is less than stated chart values, then the engine power is less than minimum performance and the aircraft engine cannot achieve rated power.

Two types of aircraft and their power checks are identified here. There are several different types of aircraft used in the Fire Suppression business. Each manufacturer has their own way of performing and recording these checks. The military aircraft also have their own way of performing and recording the power checks. The best place to get the information is from the Aircraft Flight Manual and Aircraft Maintenance Manuals.

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 FAR Part 133. The following definitions can also be found in FAR Part 1-Definitions and Abbreviations:

Class A rotorcraft-load combination – means one in which the external load cannot move freely, cannot be jettisoned, and does not extend below the landing gear.

Class B rotorcraft-load combination - means one in which the external load is jettisonable, and is lifted free of land or water during the rotorcraft operations.

Class C rotorcraft-load combination - means one in which the external load is jettisonable, and remains in contact with land or water during the rotorcraft operations.

Class D rotorcraft-load combination - means one 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. **Specifically, this is the class of load for Rappelling 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.

Payload – The difference between the maximum certificated normal (internal) gross weight and the equipped weight of the aircraft.

Public Use Aircraft – See FAA Advisory Circular 00-1.1 Government Aircraft Operations.

Reconnaissance – Normally a fixed wing aircraft used for forest health, surveillance, or for new starts and reconnaissance of on-going fires. These are usually contract aircraft and pilots with an agency employee acting as observer. Refer to the Avionics chapter of this guide to determine the difference between Reconnaissance and Fire Reconnaissance avionics requirements.

Standard Use Helicopter – (This is an Interagency designation, not to be confused with the 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.

Type I Helicopter – No less that 16 seats (including pilot) or 5000 lb payload capacity, and 700 gallons retardant capacity.

Type II Helicopter – 9 to 15 seats or 2,500 to 4,999 lbs payload capacity, and 300 to 699 gallons retardant capacity.

Type III Helicopter – 5 to 8 seats or 1,200 to 2,499 lbs payload capacity, and 100 to 299 gallons retardant capacity.

Type IV Helicopter – 3 to 4 seats or 600 to 1,199 lbs payload capacity, and 75 to 99 gallons retardant capacity

NOTE: New Type definitions may be forthcoming for Type I, II, III & IV helicopters.

II. Abbreviations, Acronyms & Terms

The following are a list of abbreviations, acronyms and terms you will encounter on a frequent basis.

AAIP – Approved Aircraft Inspection Program
AC – Advisory Circular
AD – Airworthiness Directive
AFM - Aircraft Flight Manual
AIG – Aircraft Inspection Guide Handbook, *or* Aircraft Inspectors Guide *(see MIG also)*
Air Attack – Aircraft used to control airspace over a fire, usually manned by a pilot and Air Tactical Group Supervisor (ATGS) *(See **ATGS**)*
Airworthiness – (**Airworthy)** – When an aircraft or one of its component parts meets its type design, or properly altered condition, and it is in a condition for safe flight
AM – Amplitude modulation transceiver. *(Also see **VHF-AM**)*
AMD – Aircraft Management Directorate (formerly Office of Aircraft Services)
AMI – Aircraft Maintenance Inspector
ARA - Aircraft Rental Agreement
ASM – Aerial Supervisory Module *(see **ASM** description on preceding pages)*
ATGS – Air Tactical Group Supervisor *(See **Air Attack** on preceding pages)*
BAER – Burned Area Emergency Rehabilitation
BPA - Blanket Purchase Agreement
Card – Forest Service approval document for contract aircraft
CFR – Code of Federal Regulations
COR - Contracting Officer Representative
COTR - Contracting Officer Technical Representative
CTCSS – Continuous Tone Controlled Squelch System
CWN - Call-When-Needed, as in aircraft available for contract use.
DOD – Department of Defense
DOI – Department of Interior
DOT – Department of Transportation
FAO – Forest Aviation Officer
FEPP – Federal Excess Personal Property
FM – Frequency modulated transceiver. *(Also see **VHF-FM**)*
FMO – Fire Management Officer
FOR – Fixed Operating Rate, a Forest Service term for indirect costs associated with aircraft operations
FSDO – Flight Standards District Office
FSH – Forest Service Handbook
FSM – Forest Service Manual
GPWS - Ground Proximity Warning System
ICA – Instructions for Continued Airworthiness
IFR – Instrument Flight Rules
HIGE – Hover In Ground Effect
HOGE – Hover Out of Ground Effect
IHOG – Interagency Helicopter Operations Guide

MEL - Minimum Equipment List
MIG – Maintenance Inspectors Guide *(no longer used acronym, see AIG)*
NIICD – National Interagency Incident Communications Division (i.e. National Radio Cache).
NIFC – National Interagency Fire Center (Boise)
NTIA – National Telecommunications and Information Administration
OAS - Office of Aircraft Services (now called the Aircraft Management Directorate)
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** *(see definition below)*
PA - Pressure Altitude
PASP – Project Aviation Safety Plan
Public Aircraft - See FAR 1, Definitions and Abbreviations
QAS – Quality Assurance Specialist
QEC - Quick Engine Change (Kit)
RAO – Regional Aviation Officer
RASM – Regional Aviation Safety Manager
Rebuilt – Assembled with, or to New Limits
RF – Regional Forester
RO – Regional Office
S/B – Service Bulletin, an FAA approved document issued by manufacturer's to address aircraft problems
SAFECOM – Interagency method to report incidents, hazards, maintenance, and airspace intrusions
SEAT – Single Engine Air Tanker
Serviceable Limits – unit not expected to fail prior to next scheduled **TBO**
STC – Supplemental Type Certificate
TAWS – Terrain Awareness and Warning System *(for a breakdown of the various TAWS requirements and modes see the end of Appendix 7)*
TBO – Time Between Overhaul
Type I, II, III, IV Air Attack – Classification of small fixed wing aircraft by avionics capabilities *(see preceding pages and Chapter 8 for a definition of each)*
Type I, II, III, IV Helicopters – Classification of helicopters by passenger and payload capacity *(see preceding pages for a definition of each)*
Use Rate – Forest Service term for hourly rate
VFR – Visual Flight Rules
VHF-AM – Amplitude modulated transceiver. *(Also see **AM**)*
VHF-FM – Frequency modulated transceiver. *(Also see **FM**)*
WCF - Working Capital Fund
WO – Washington Office (East or West)

Appendix 7
NATIONAL AIR TACTICAL/RECONNAISSANCE STANDARDS

CURRENT AS OF:
November 1, 2005

Contract Language for all CWN Light Fixed-Wing contracts and basic requirements for all Exclusive Use Light Fixed-Wing contracts:

CONTRACTING OFFICER – DELETE ITALICIZED INSTRUCTIONS BEFORE ISSUING CONTRACT.

CONTRACTING OFFICER - NO MODIFICATION TO INDIVIDUAL SPECIFICATIONS IN SECTION A MAY BE MADE; HOWEVER, YOU MAY DELETE RECONNAISSANCE OR A TYPE OF AIR TACTICAL SPECIFICATION IF YOU WILL NOT BE USING IT IN YOUR CONTRACT.

XX. Aircraft Avionics. A description of below requirements is listed in Section D, Specifications. The use of VHF-FM mobile (vehicle type) radios in aircraft is prohibited.

XX.A Reconnaissance Aircraft. Reconnaissance aircraft must meet all of the following:

1. An ELT.
2. An aeronautical VHF-AM radio transceiver.
3. Instruments and lighting for 14 CFR Part 135 night VFR operations (135.159 & 135.161).
4. A GPS Unit.

and either

5. One (minimum) VHF-FM Aeronautical Antenna.

or the following three (3) items.

5. An Audio Control System.
6. An aeronautical VHF-FM radio transceiver.
7. An Intercommunications System.
8. Special Provisions.
   a. Fire Reconnaissance aircraft must have a dedicated guard receiver. This may be accomplished with the aircraft having two VHF-FM Aeronautical Antennas. The government would then furnish two (2) portable radios.

   or

   One (1) aeronautical VHF-FM radio transceiver.
   b. The Relm B/K KFM-985 VHF-FM radio may be used in lieu of a handheld radio with VHF-FM Aeronautical Antennas on Reconnaissance/Fire Reconnaissance

aircraft only. The KFM-985 shall meet Aeronautical VHF-FM radio transceiver specifications paragraphs (1), (2), and (3). Five (5) watt nominal transmitter power output is acceptable.

XX.B Air Tactical Aircraft. Air Tactical aircraft must meet all the following (as required by Type):

1. All Air Tactical Types:
   a. ELT.
   b. Two aeronautical VHF-AM radio transceivers.
   c. Instruments and lighting for 14 CFR Part 135 night VFR operations (135.159 & 135.161).
   d. A Transponder, Altitude Encoder and Static Systems.

Note: Regardless of available aircraft equipment or capabilities, Supplemental Air Attack Kit installations in any Type shall not elevate the aircraft's capability beyond that Type the aircraft would normally be carded if the supplemental radio kit were removed.

Note: If an approved TCAS/TCAD is furnished, the aircraft shall be identified as a "Type I with TCAS/TCAD" or a "Type II with TCAS/TCAD".

2. Type I:
   a. A panel mounted GPS.
   b. Separate audio control systems for the pilot and co-pilot/ATGS.
   c. A set of audio/mic jacks with PTT capability in the rear seat for an ATGS instructor connected to the co-pilot/ATGS's audio control system. A separate audio control system for the instructor is acceptable.
   d. Two permanently installed aeronautical VHF-FM radio transceivers.
   e. An Intercommunication system.

   and either

   f. Provisions for an Auxiliary VHF-FM Portable Radio.

   or

   f. A third aeronautical VHF-FM radio transceiver.

   Exclusive Use Type I Air Tactical aircraft also require:
   a. An Automated Flight Following (AFF) system.

3. Type II:
   a. A panel mounted GPS.
   b. Separate audio control systems for the pilot and co-pilot/ATGS.
   c. A set of audio/mic jacks with PTT capability in the rear seat for an ATGS

instructor connected to the co-pilot/ATGS's audio control system. A separate audio control system for the instructor is acceptable.

d. One permanently installed aeronautical VHF-FM radio transceiver.
e. An Intercommunication system.

and either

f. Provisions for an Auxiliary VHF-FM Portable Radio.

or

f. A second aeronautical VHF-FM radio transceiver.

Exclusive Use Type II Air Tactical aircraft also require:

a. An Automated Flight Following (AFF) system.

4. Type III:
   a. A GPS unit.
   b. An Audio Control System.
   c. A permanently installed aeronautical VHF-FM radio transceiver.
   d. An Intercommunications system.

5. Type IV:
   a. A GPS unit.
   b. An Audio Control System.
   c. Two VHF-FM aeronautical antennas.
   d. An Accessory Power Source.
   e. The floor space between the pilot and co-pilot/observer seats shall be free of all obstructions for Supplemental Air Attack kit installation.

Note: If the contractor provides an approved Supplemental Air Attack Kit, the aircraft shall be identified as a "Type IV with radio kit".

CONTRACTING OFFICER – SELECTED ITEMS OF THE FOLLOWING SECTION MAY BE

INCORPORATED INTO SECTION B FOR CLARITY.

XX.C Selected Additional Avionics Requirements. The following additional items may be required to meet local needs. When the option block ( ) is checked, the operator shall install and maintain the checked equipment. If an item is checked and already is a required item, then the checked item is an additional requirement.

( ) An aeronautical VHF-AM radio transceiver.
( ) A panel mounted GPS in lieu of a handheld GPS.
( ) A moving map capable navigation system.
( ) A GPS Data Connector.

( ) A panel mounted VOR receiver system.
( ) Provisions for IFR operation.
( ) An aeronautical VHF-FM radio transceiver.
( ) A UHF Aeronautical Transceiver.
( ) A Low Band Aeronautical Transceiver.
( ) A Project 25 compliant digital aeronautical VHF-FM radio transceiver.
( ) Provisions for an Auxiliary VHF-FM Portable Radio.
( ) The floor space between the pilot and co-pilot/observer seats shall be free of all obstructions for supplemental radio kit installation.
( ) A VHF-FM Aeronautical Antenna.
( ) A UHF Aeronautical Antenna.
( ) A Low Band Aeronautical Antenna.
( ) An Accessory Power Source.
( ) A Transponder, Altitude Encoder and Static Systems (Reconnaissance).
( ) A DME system.
( ) TCAS or TCAD
( ) An Automated Flight Following (AFF) system.
( ) An Audio Control System.
( ) A separate audio control system for the ATGS instructor.
( ) An Intercommunications System for the pilot and co-pilot/observer.
( ) An Intercommunications System for the pilot, co-pilot/observer and all passengers.

CONTRACTING OFFICER - SECTION D, SPECIFICATIONS, MUST BE IN ALL CONTRACTS. ONLY THOSE CHANGES IDENTIFIED ARE PERMITTED.

XX.D Specifications.

CONTRACTING OFFICER - NO MODIFICATION TO SECTION 1a MAY BE MADE. YOU MAY HOWEVER, DELETE 2b IF IT IS NOT USED IN YOUR CONTRACT.

1. GENERAL

   a. All required avionics systems shall be furnished, installed, and maintained by the Contractor in accordance with the manufacturer's specifications and the installation and maintenance standards of this section.

   b. Accessory Power Source. A power connector (MS3112E12-3S) protected by a 10 amp circuit breaker directly connected to the avionics or aircraft power buss. The connector shall be permanently mounted in a location convenient to the co-pilot/observer. Pin A shall be +24 VDC in 24 volt aircraft, Pin B shall be aircraft

ground, and Pin C shall be +12 VDC in 12 VDC aircraft. NEVER apply power to both Pins A and C simultaneously.

CONTRACTING OFFICER - NO MODIFICATION TO SECTION 2a, OR 2b MAY BE MADE. YOU MAY HOWEVER, DELETE ANY OTHER LOWER CASE PARAGRAPH IF IT IS NOT USED IN YOUR CONTRACT.

2. COMMUNICATION SYSTEMS

a. Emergency Locator Transmitter (ELT). One automatic-portable/automatic-fixed or automatic-fixed ELT utilizing an external antenna and meeting the same requirements as those detailed for airplanes in 14 CFR 91.207 (excluding section f.), shall be installed per the manufacturer's installation manual, in a conspicuous or marked location. ELTs certified under TSO-91 are not acceptable.

NOTE: After January 31, 2009, only ELTs transmitting on 406 MHz (TSO-C126 type) will be detected by satellites. The FAA recommends that any new ELT be a TSO-C126 type with a GPS/FMS interface and be registered with the National Oceanic and Atmospheric Administration (NOAA).

b. Aeronautical VHF-AM radio transceiver. A panel mounted aeronautical VHF-AM radio transceiver (VHF-1), operating in the frequency band of 118.000 to 136.975 MHz, with a minimum of 760 channels in no greater than 25 kHz increments, and a minimum of 5 watts carrier output power. In aircraft requiring two VHF-AM radios, the second radio may be a 720 channel transceiver.

c. Aeronautical VHF-FM radio transceiver (FM-1). For a list of currently acceptable VHF-FM radios, visit http://www.fs.fed.us/fire/niicd/documents.html

(1) The transceiver shall operate from 150 to 174 MHz, permit the operator to program any usable frequency within that band while in flight, provide operator selection of both wide-band (25 kHz bandwidth/5 kHz modulation) and narrow-band (12.5 kHz bandwidth/2.5 kHz modulation) operation by channel for MAIN and AIR GUARD operation. Transceivers shall be set to operate in the narrowband mode (typically indicated with a lower case "n") unless local requirements dictate otherwise.

(2) Carrier output power shall be 10 watts nominal. The transceiver shall be capable of displaying receiver and transmitter operating frequency. Transceivers shall provide both receiver and transmitter activation indicators for MAIN and AIR GUARD. Simultaneous monitoring of both MAIN and AIR GUARD (168.6250

MHz) is required. Scanning of AIR GUARD is not acceptable. AIR GUARD communications may only be used for: Emergencies; initial call; recall; and redirection.

(3) A CTCSS sub-audible tone encoder with a minimum of 32 standards selectable tones, meeting the current TIA/EIA-603 standard, shall interface with the above transceiver. The encoder shall encode a 110.9 Hz tone on all AIR GUARD transmissions.

(4) The transceiver's operational controls shall be mounted in a location that is convenient to both pilot and co-pilot/observer.

(5) Aircraft having two or more aeronautical VHF-FM radio transceivers need only have an AIR GUARD receiver in the first transceiver (FM-1).

(6) The following analog aeronautical VHF-FM transceivers are acceptable.

Eureka Radio Systems (ERS)	ERS-96000NB with external tone encoder
Northern Airborne Technology	NPX-138N-050/070 & NTX-138-050
Technisonic Industries	TFM-138 (serial # 1540 & up), TFM-138B/C/D, TDFM-136, & TFM-500
Wulfsburg Electronics	Flexcom II, RT-138N, & RT-9600N

NOTE: All aeronautical VHF-FM transceivers will convert to multimode (P25) digital on January 1, 2010. Only P25 aeronautical compliant transceivers will be acceptable after this date.

(7). The following multimode (P25) digital aeronautical VHF-FM transceivers are known to be acceptable.

Technisonic Industries TDFM-136

(8) Multimode (P25) digital aeronautical VHF-FM transceivers must meet FS/OAS A-19. For a copy of FS/OAS A-19, visit http://www.fs.fed.us/fire/niicd/documents.html

d. Provisions for auxiliary VHF-FM (AUX-FM) portable radio:

(1) The Contractor shall provide the necessary interface for installing and properly operating an auxiliary VHF-FM portable radio through the aircraft's audio control system(s). The interface shall consist of the appropriate wiring from the audio control system, terminate in an MS3112E12-10S type connector and utilizing the

contact assignments as specified by drawing FS/OAS-17 ; AUX-FM RADIO INTERFACE, Section J, List of Attachments.

(2) One weatherproof, external, broadband antenna (Comant type CI-177 or equal) covering the 150-174 MHz band, with associated RG-58A/U (or equivalent) coaxial cable and connector, terminated in a bulkhead-mounted, female BNC connector adjacent to the above 10-pin connector.

(3) Mounting facilities, in accordance with the specifications of FAA Advisory Circular AC 43.13-2A, for secure installation of the auxiliary VHF-FM portable radio in the cockpit shall be provided (Field Support Services (www.helifire.com) AUX-EPH-RB or equivalent). The location of the mounting facilities shall be such that, when connected with an 18-inch adapter cable, allows the co-pilot/observer full and unrestricted movement of the radio's controls.

(4) Positive-polarity microphone excitation voltage shall be provided to the AUX-FM system from the aircraft DC power system through a suitable resistor network. A blocking capacitor shall be provided to prevent the portable radio microphone excitation voltage from entering the system. Sidetone for the AUX-FM shall also be provided (NAT AA34, Premier PA-34, or equivalent).

(5) If the AUX-FM specifications are intended for UHF or Low Band use, the appropriate antenna shall be used and the audio control(s) shall be labeled accordingly.

e. Automated Flight Following (AFF)

(1) One Automated Flight Following (AFF) system compatible with the governments AFF tracking network (Webtracker) is required. Not all available AFF systems are compatible with Webtracker nor meet Webtracker's requirements. The contractor shall ensure that the AFF system offered is compatible with Webtracker. To view Webtracker's current compatibility requirements refer to https://www.aff.gov.

(2) The AFF system shall be powered by the aircraft's electrical system, installed per the manufacturer's installation manual, and operational in all phases of flight. AFF equipment shall utilize as a minimum: Satellite communications, an externally mounted antenna, provide data to the Government's Webtracker software, use aircraft power via a dedicated circuit breaker for power protection, and be mounted so as to not endanger any occupant from AFF equipment during periods of turbulence. Any AFF manufacturer required pilot display(s) or control(s) shall be visible/selectable by the pilot(s). Remote equipment having

visual indicators should be mounted in such a manner as to allow visual indicators to be easily visible.

(3) AFF communications shall be fully operational in the lower 48 states. Contractors accepting dispatches to the State of Alaska, Southern Canada, or Western Canada must have an AFF system capable of being tracked in these locations at all times. Not all manufacturers' AFF equipment communication links will operate effectively in all geographic areas.

(4) The contractor shall maintain a subscription service through the AFF equipment provider allowing AFF position reporting for satellite tracking via Webtracker. The position-reporting interval shall be every two minutes while the aircraft is in flight. The contractor shall register their AFF equipment with the Boise Help Desk providing: Complete tail number, manufacturer and serial number of the AFF transceiver; aircraft make and model; and Contractor contact information. If the Contractor relocates previously registered AFF equipment into another aircraft, then the Contractor shall contact the Boise Help Desk making the appropriate changes prior to aircraft use. In all cases, the contractor shall ensure that the correct aircraft information is indicated within Webtracker. The Contractor shall contact the Boise Help Desk of system changes, scheduled maintenance, and planned service outages.

(5) Registration contact information, a web accessible feedback form, and additional information is available at: https://www.aff.gov. The Boise Help Desk can be reached at (800) 253-5559 or (208) 387-5290.

(6) Prior to the aircraft's annual Contract inspection, the Contractor shall ensure compliance with all AFF systems requirements. The Contractor shall additionally perform an operational check of the system. As a minimum, the operational check shall consist of confirming the aircraft being tested is displayed in Webtracker (indicating it is currently transmitting data to Webtracker) and that all information displayed in Webtracker is current. A username and password is required to access Webtracker. Log on to the AFF website at https://www.aff.gov to request a username and password, or contact the Boise help desk. When the aircraft passes the operational check, an aircraft log book entry shall be made.

(7) This clause incorporates Specification Section Supplement available at: https://www.aff.gov/contract.asp with the same force and effect as if they were presented as full text herein.

f. VHF-FM Aeronautical Antenna. A broadband aeronautical antenna (Comant CI-177 or equivalent) operating from 150 to 174 MHz with coaxial cable (RG-58 A/U or

better) terminated on a male BNC connector. The antenna cable in the cabin shall have the ability to connect to a unit mounted between the pilot and co-pilot/observer's seats plus 4 feet (minimum). Antenna VSWR shall be better than 2.5 to 1.

g. Supplemental Air Attack Kits. See the appropriate Specification sections in this contract for specification requirements. Any supplemental Air Attack kit must consists of all the following (as a minimum):

(1) One aeronautical VHF-FM radio transceiver.

(2) One Auxiliary VHF-FM (AUX-FM) portable radio interface. Provisions under the AUX-FM specifications for a VHF-FM antenna are not applicable.

(3) Separate audio control systems for the pilot and co-pilot/ATGS. The first control position shall be for the aircraft's audio control system followed by the supplemental Air Attack kit's transceivers (i.e. A/C, FM1, FM2, AUX, etc.).

(4) A remote set of audio/mic (JJ-034/JJ-033) jacks with PTT capability and a volume adjustment in the rear of the kit for an ATGS instructor connected to the co-pilot/ATGS's audio control system. A separate audio control system for the instructor is acceptable.

(5) An intercommunication system supporting for all required positions.

(6) A power cord terminated with an MS3116F12-3P connector wired to mate with an Accessory Power Source connector. The supplemental Air Attack kit shall be able to operate on both +12 VDC and +24 VDC, although not simultaneously.

(7) Audio (PJ-055) and Mic (PJ-068) type plugs for connection to an aircraft's audio system. The mic plug shall be capable of PTT operation.

(8) The pilot and co-pilot/ATGS's mic jacks (JJ-033) shall have PTT capability.

(9) Bulkhead mounted female BNC connectors on the side of the kit for the VHF-FM aeronautical radio antenna connection(s).

(10) Newly constructed supplemental radio kits shall meet applicable portions of 14 CFR 23.853 and 23.855 for interior and cargo compartment flame survivability.

(11) A means of securing the supplemental radio kit, while in flight, meeting FAA Advisory Circular AC 43.13-2A.

h. UHF aeronautical transceiver (UHF) operating in the frequency range of 406 to 512 MHz, which provides selection of either narrow-band (12.5 kHz) or wide-band (25.0 kHz) channel spacing operation on each channel. The transceiver shall meet applicable specifications provided in FS/OAS A-24; AVIONICS OPERATIONAL TEST STANDARDS. For a copy of FS/OAS A-24, visit http://www.fs.fed.us/fire/niicd/documents.html

i. VHF Low Band aeronautical transceiver (LB) operating in the frequency range of 32 to 50 MHz, with channel spacing of 20 kHz. The transceiver shall meet applicable specifications provided in FS/OAS A-24; AVIONICS OPERATIONAL TEST STANDARDS. For a copy of FS/OAS A-24, visit http://www.fs.fed.us/fire/niicd/documents.html

j. UHF Aeronautical Antenna. A broadband aeronautical antenna (Comant CI-275 or equivalent) operating from 406 to 512 MHz with coaxial cable (RG-58 A/U or better) terminated on a male BNC connector. The antenna cable in the cabin shall have the ability to connect to a unit mounted between the pilot and co-pilot/observer's seats plus 4 feet (minimum). Antenna VSWR shall be better than 2.5 to 1.

k. Low Band Aeronautical Antenna. A broadband aeronautical antenna (Dayton-Granger 720061 or equivalent) operating from 32 to 50 MHz with coaxial cable (RG-58 A/U or better) terminated on a male BNC connector. The antenna cable in the cabin shall have the ability to connect to a unit mounted between the pilot and co-pilot/observer's seats plus 4 feet (minimum). Antenna VSWR shall be better than 2.5 to 1.

CONTRACTING OFFICER - NO MODIFICATION TO INDIVIDUAL PARAGRAPHS IN SECTION 3 MAY BE MADE. YOU MAY HOWEVER, DELETE ANY LOWER CASE PARAGRAPH IF IT IS NOT USED IN YOUR CONTRACT.

3. NAVIGATION SYSTEMS

a. Global Positioning System (GPS).

(1) Handheld GPS units shall be: located conveniently to the pilot; the database shall not be over one (1) year old; use an antenna mounted separately from the handheld GPS receiver; and use aircraft power that is circuit protected. The GPS unit must have the ability for manual entry of waypoints in flight. The antenna shall receive telemetry in all flight regimes [Note: It is highly recommended that

the antenna be a permanently mounted, external, aviation type]. The handheld GPS receiver, antenna, and all loose wires shall be secured and not present a safety hazard. Installations shall be in accordance with the AVIONICS INSTALLATION AND MAINTENANCE STANDARDS section.

(2) One panel-mounted GPS shall be permanently installed in the aircraft. The GPS shall: utilize WGS-84 datum; reference latitude and longitude coordinates in the DM (degrees/minutes/decimal minutes) mode; utilize an approved, fixed, external aircraft antenna; and be powered by the aircraft electrical system. The GPS unit must have the ability for manual entry of waypoints in flight. The GPS shall have a data base (VFR and in route units not over one (1) year old and IFR approach units not over 28 days old) covering the continental United States and Alaska. Handheld and/or marine type equipment is not acceptable

b. Transponder and Altitude Encoder. An ATC transponder and altitude reporting system meeting the requirements of 14 CFR 91.215(a) and (b) and tested and inspected per 14 CFR 91.413.

c. Static Systems. Although the aircraft to be provided may not be certified for IFR flight, the aircraft's static pressure system, altimeter instrument system, and automatic pressure altitude reporting system shall be maintained in accordance with the IFR requirements of 14 CFR 91.411 and inspected and tested every 24 calendar months as specified by 14 CFR Part 43, appendices E and F.

d. GPS Data Connector. A GPS data connector shall be installed for the purpose of external data retrieval by a GIS laptop computer. The connector shall be a DB-9F type D sub-connector shall be wired for RS-232C serial format for laptop computers (pin 2-transmit data, pin 3-receive data if applicable, and pin 5-ground) and shall be mounted in a location convenient to the observer.

CONTRACTING OFFICER - NO MODIFICATION TO SECTION 4, AUDIO CONTROL SYSTEMS MAY BE MADE. SECTION 4 MUST BE USED IN IT'S ENTIRETY FOR ALL SPECIAL USE CONTRACTS.

4. AUDIO CONTROL SYSTEM(S)

a. General.

(1) The audio control system shall provide the specified operator(s) with controls for selection of receiver audio outputs and transmitter microphone/PTT audio inputs.

b. Transmitter selection and operation.

(1) Transmitter selection controls shall be provided to the specified operator(s) for microphone/PTT inputs. Whenever a transmitter is selected, the companion receiver audio shall automatically be selected for the corresponding earphone. Transmitter sidetone audio shall be provided for the operator as well as for cross-monitoring via the corresponding receiver selection switch on other audio control systems (if required). Multiple audio control systems shall be configured so that the operators may each simultaneously select and utilize a different transmitter (or PA system when installed) via their respective microphone/PTT.

c. Receiver selection and operation.

(1) Reconnaissance aircraft shall have a receiver audio selector(s) for available receivers. Air Tactical aircraft shall have separate receiver selection controls providing the required operator's audio from one or any combination of available receivers. Any passenger positions, if required, shall monitor the receiver(s) as selected by the pilot (single system) or co-pilot/observer's (multiple systems) audio control panel. The instructor, if required, shall monitor the receiver's as selected by the co-pilot/observer's audio control panel unless the instructor's position has/requires a separate audio control panel. Performance specifications for receiver audio to all earphone connectors are specified in Section J, FS/OAS A-24; AVIONICS OPERATIONAL TEST STANDARDS.

d. Radios and Systems.

(1) As a minimum, the audio control system(s) shall provide for selection of all installed radios and PA systems. The instructor's audio control, if required, does not have to receive NAV inputs.

e. Earphones and microphones.

(1) The audio system shall be designed for operation with 600-ohm earphones and carbon-equivalent, noise-canceling boom-type microphones. All earphone jacks in the aircraft shall be JJ-034 type and all microphone jacks shall be JJ-033 type. Jack pairs shall not be separated by more than 4 inches.

f. Push-to-talk (PTT) operation.

(1) Separate transceiver PTT switches shall be provided for each required operator (i.e. pilot, co-pilot/observer, and instructor). PTT switches for non-pilots shall not located on the flight controls.

(2) Aircraft requiring a supplemental radio kit shall have a JJ-033 type jack, located in the cockpit by the pilot or co-pilot/observer, capable of remotely operating PTT on installed aircraft transceivers via the transmitter selector on the pilot's audio control panel. The JJ-033 type jack shall not be separated by more than 4 inches from a JJ-034 jack operating through the same audio control panel.

CONTRACTING OFFICER - NO MODIFICATION TO SECTION 5, INTERCOMMUNICATION SYSTEM (ICS), MAY BE MADE. SECTION 5 MUST BE USED IN IT'S ENTIRETY FOR ALL SPECIAL USE CONTRACTS.

5. INTERCOMMUNICATION SYSTEM (ICS)

a. Ability for all required positions to communicate using JJ-033 and JJ-34 type jacks for headsets. Hot mic controlled via an activation switch or voice activation (VOX) shall be provided. ICS audio shall mix with, but not mute, selected receiver audio. An ICS audio level control shall be provided. ICS sidetone audio shall be provided for the earphones corresponding with the microphone in use. The pilot shall have an ICS isolation capability. Performance specifications for the ICS system are specified in FS/OAS A-24; AVIONICS OPERATIONAL TEST STANDARDS. For a copy of FS/OAS A-24, visit http://www.fs.fed.us/fire/niicd/documents.html

CONTRACTING OFFICER - NO MODIFICATION TO SECTION 6, AVIONICS INSTALLATION AND MAINTENANCE STANDARDS, MAY BE MADE. SECTION 6 MUST BE USED IN IT'S ENTIRETY FOR ALL SPECIAL USE CONTRACTS.

6. AVIONICS INSTALLATION AND MAINTENANCE STANDARDS

.

a. All avionics systems used in or on the aircraft for this contract and their installation and maintenance shall comply with all manufacturers' specifications and applicable Federal Aviation Regulations contained within 14 CFR.

b. Strict adherence to the recommendations in FAA AC 43.13-1B Chapter 11, "Aircraft Electrical Systems", and Chapter 12, "Aircraft Avionics Systems", as well as AC 43.13-2A Chapter 1, "Structural Data", Chapter 2, "Radio Installation", and Chapter 3, "Antenna Installation", is required.

c. Antennas shall be polarized as required by the avionics system and have a VSWR less than 2.5 to 1.

d. All avionics systems requiring an antenna shall be installed with a properly matched aircraft-certified, broadband antenna unless otherwise specified.

e. Required avionics systems and contractor offered avionics/communication equipment must meet the performance specifications as specified in FS/OAS A-24; AVIONICS OPERATIONAL TEST STANDARDS. For a copy of FS/OAS A-24, visit http://www.fs.fed.us/fire/niicd/documents.html

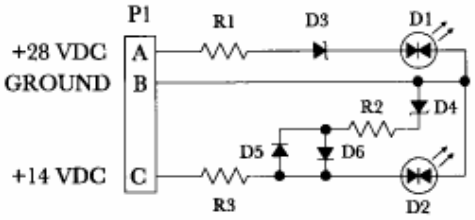
f. Labeling and marking of all avionics controls and equipment shall be clear, understandable, legible, and permanent. Electronic label maker marking is acceptable.

g. Avionics equipment mounting location and installation shall not interfere with crew or passenger safety, space, and comfort. Avionics equipment will not be mounted under seats designed for deformation during energy attenuation. In all instances, the designated areas for collapse shall be protected.

AVIONICS TEST PLUGS

ACCESSORY (3 PIN IR) PLUG

FOR SLIP-IN RADIO EQUIPMENT, IR EQUIPMENT, SPHERE DISPENCERS, AND MISCELLANEOUS EQUIPMENT.



P1: MS3116F12-3P (M/W MS8112E12-8S)

D1 & D2: Bi-Color Diode, i.e. Red/Green (Dialight 521-9462)

D3 & D4: ECG 5076A

D5 & D6: 1N4004

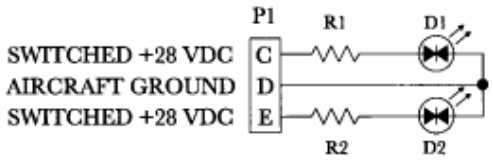
R1 & R2: 270 OHM, 1/4 WATT

R3: 560 OHM, 1/4 WATT

Assembly: Solder diodes so that Green is correct pin polarity and Red is reverse polarity. Seal plug components with clear RTV to prevent shock and damage. Mark diodes, after RTV drys, for easy identification as to which diode indicates 14 or 28 VDC.

9 PIN PLUG

FOR 2 WIRE SIMPLEX HELITORCH, BAMBI BUCKET, REMOTE HOOK, SEEDERS, AND 3 WIRE BRACKETT CAROUSEL AND CHADWICK BUCKETS



P1: MS3107B24-11P (M/W MS3101E24-11S)

D1 & D2: Bi-Color Diode, i.e. Red/Green (Dialight 521-9462)

R1& R2: 1200 OHM, 1/2 WATT

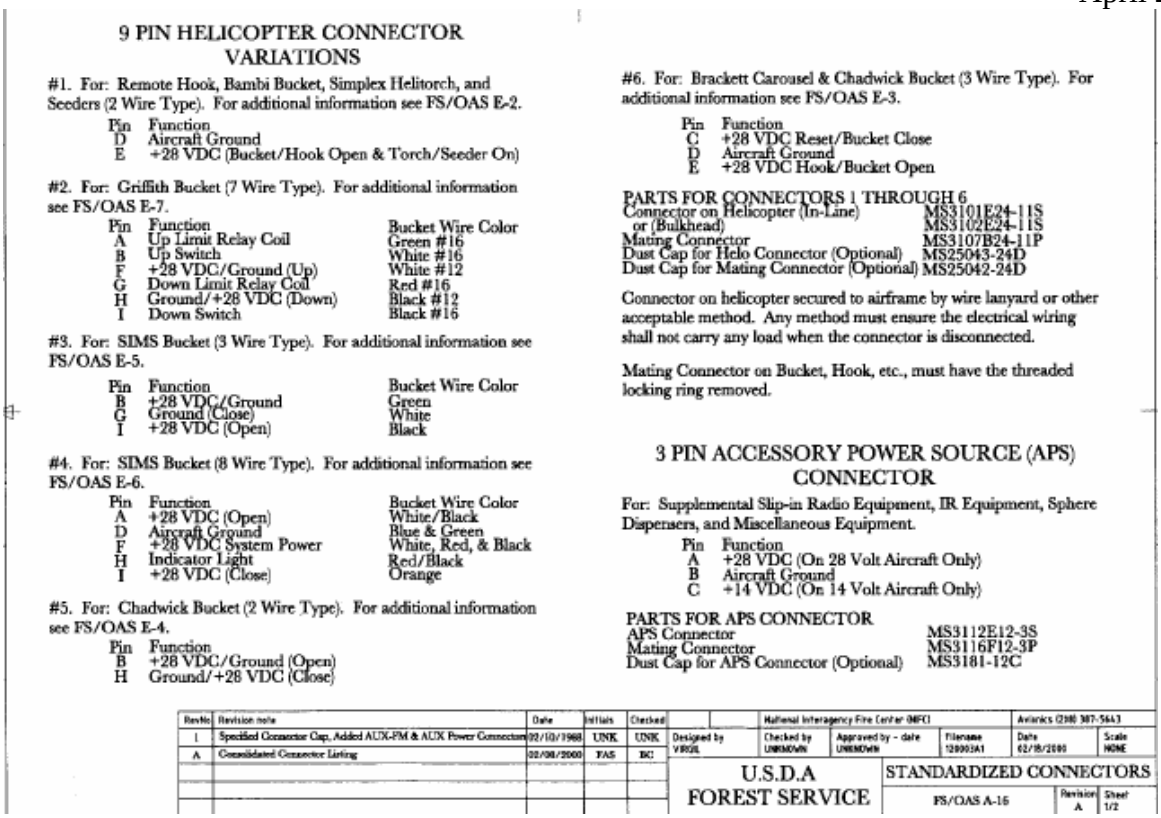
Assembly: Solder diodes so that Green is correct pin polarity and Red is reverse polarity. Remove threaded locking ring from P1 (for quick and easy testing). Pin C (+28 VDC Reset/bucket close) may seldom be used on standard plug installations but it is a good idea to include pin C during assembly. Seal plug components with clear RTV to prevent shock and damage. Mark diodes, after RTV drys, for easy identification as to which diode indicates bucket open (pin E) or bucket closed (pin C).

PARTS SOURCES:

ELECTRONIC CONNECTORS CORP.	(800) 742-3262
SPACECRAFT ELECTRONICS CORP.	(310) 973-6400
NEWARK ELECTRONICS	(800) 463-9275

RevNo	Revision note	Date	Initials	Checked			National Interagency Fire Center (NFC)			Avionics (208) 387-5643
A	Simplified	06/15/1995	KS	BC	Designed by VIRGIL	Checked by UNKNOWN	Approved by – date UNKNOWN	Filename 1200328	Date 03/20/1999	Scale NONE
B	Updated & Added Information	03/20/1999	FAS	BC						
					U.S.D.A FOREST SERVICE		AIRCRAFT TEST PLUGS			
							FS/OAS A-18		Revision B	Sheet 1/1

Figure Appendix 7-1, 3 Pin Accessory Test Plug



9 PIN HELICOPTER CONNECTOR VARIATIONS

#1. For: Remote Hook, Bambi Bucket, Simplex Helitorch, and Seeders (2 Wire Type). For additional information see FS/OAS E-2.

Pin	Function
D	Aircraft Ground
E	+28 VDC (Bucket/Hook Open & Torch/Seeder On)

#2. For: Griffith Bucket (7 Wire Type). For additional information see FS/OAS E-7.

Pin	Function	Bucket Wire Color
A	Up Limit Relay Coil	Green #16
B	Up Switch	White #16
F	+28 VDC/Ground (Up)	White #12
G	Down Limit Relay Coil	Red #16
H	Ground/+28 VDC (Down)	Black #12
I	Down Switch	Black #16

#3. For: SIMS Bucket (3 Wire Type). For additional information see FS/OAS E-5.

Pin	Function	Bucket Wire Color
B	+28 VDC/Ground	Green
G	Ground (Close)	White
I	+28 VDC (Open)	Black

#4. For: SIMS Bucket (8 Wire Type). For additional information see FS/OAS E-6.

Pin	Function	Bucket Wire Color
A	+28 VDC (Open)	White/Black
D	Aircraft Ground	Blue & Green
F	+28 VDC System Power	White, Red, & Black
H	Indicator Light	Red/Black
I	+28 VDC (Close)	Orange

#5. For: Chadwick Bucket (2 Wire Type). For additional information see FS/OAS E-4.

Pin	Function
B	+28 VDC/Ground (Open)
H	Ground/+28 VDC (Close)

#6. For: Brackett Carousel & Chadwick Bucket (3 Wire Type). For additional information see FS/OAS E-3.

Pin	Function
C	+28 VDC Reset/Bucket Close
D	Aircraft Ground
E	+28 VDC Hook/Bucket Open

PARTS FOR CONNECTORS 1 THROUGH 6

Connector on Helicopter (In-Line)	MS3101E24-11S
or (Bulkhead)	MS3102E24-11S
Mating Connector	MS3107B24-11P
Dust Cap for Helo Connector (Optional)	MS25043-24D
Dust Cap for Mating Connector (Optional)	MS25042-24D

Connector on helicopter secured to airframe by wire lanyard or other acceptable method. Any method must ensure the electrical wiring shall not carry any load when the connector is disconnected.

Mating Connector on Bucket, Hook, etc., must have the threaded locking ring removed.

3 PIN ACCESSORY POWER SOURCE (APS) CONNECTOR

For: Supplemental Slip-in Radio Equipment, IR Equipment, Sphere Dispensers, and Miscellaneous Equipment.

Pin	Function
A	+28 VDC (On 28 Volt Aircraft Only)
B	Aircraft Ground
C	+14 VDC (On 14 Volt Aircraft Only)

PARTS FOR APS CONNECTOR

APS Connector	MS3112E12-3S
Mating Connector	MS3116F12-3P
Dust Cap for APS Connector (Optional)	MS3181-12C

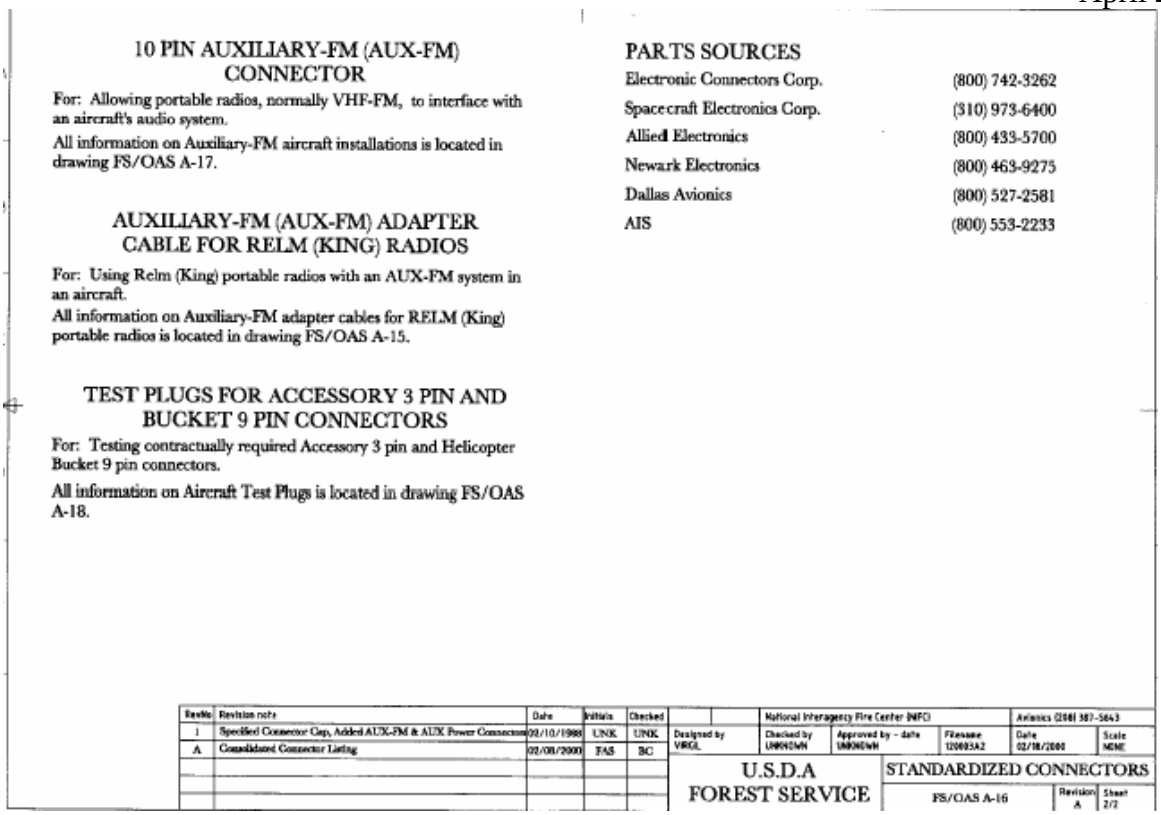
Rev No	Revision note	Date	Initials	Checked
1	Specified Connector Cap, Added AUX-PM & AUX Power Connectors	02/10/1998	UNK	UNK
A	Consolidated Connector Listing	02/08/2000	TAS	BC

National Interagency Fire Center (NIFC) — Avionics (208) 387-5643

Designed by	Checked by	Approved by - date	Filename	Date	Scale
VIRGIL	UNKNOWN	UNKNOWN	120003A1	02/15/2000	NONE

U.S.D.A FOREST SERVICE — STANDARDIZED CONNECTORS — FS/OAS A-16 — Revision A — Sheet 1/2

Figure Appendix 7-2, Helicopter 9 Pin Test Plug



10 PIN AUXILIARY-FM (AUX-FM) CONNECTOR

For: Allowing portable radios, normally VHF-FM, to interface with an aircraft's audio system.

All information on Auxiliary-FM aircraft installations is located in drawing FS/OAS A-17.

AUXILIARY-FM (AUX-FM) ADAPTER CABLE FOR RELM (KING) RADIOS

For: Using Relm (King) portable radios with an AUX-FM system in an aircraft.

All information on Auxiliary-FM adapter cables for RELM (King) portable radios is located in drawing FS/OAS A-15.

TEST PLUGS FOR ACCESSORY 3 PIN AND BUCKET 9 PIN CONNECTORS

For: Testing contractually required Accessory 3 pin and Helicopter Bucket 9 pin connectors.

All information on Aircraft Test Plugs is located in drawing FS/OAS A-18.

PARTS SOURCES

Electronic Connectors Corp.	(800) 742-3262
Spacecraft Electronics Corp.	(310) 973-6400
Allied Electronics	(800) 433-5700
Newark Electronics	(800) 463-9275
Dallas Avionics	(800) 527-2581
AIS	(800) 553-2233

Revision	Revision note	Date	Initials	Checked
1	Specified Connector Cap, Added AUX-FM & AUX Power Connectors	02/10/1988	UNK	UNK
A	Consolidated Connector Listing	02/08/2000	FAS	BC

Designed by VIRGIL | Checked by UNKNOWN | Approved by - date UNKNOWN | Filename 120603A2 | Date 02/18/2000 | Scale NONE

National Interagency Fire Center (NIFC) | Avionics (208) 387-5643

U.S.D.A FOREST SERVICE

STANDARDIZED CONNECTORS

FS/OAS A-16 | Revision A | Sheet 2/2

Figure Appendix 7-3, Aux-FM 10 Pin Adapter Connectors

TERRAIN AWARENESS WARNING SYSTEM

Alert Mode Comparison

	GPWS	Class A	Class B
Forward Looking Terrain Alert (FLTA)		Yes	Yes
Premature Descent Alter (PDA)		Yes	Yes
Excessive Rate of Descent	1	Yes	Yes
Excessive Closure Rate to Terrain	2	Yes	No
Negative Climb Rate or Altitude Loss After Takeoff	3	Yes	Yes
Flight into Terrain when NOT in Landing Configuration	4	Yes	No
Excessive Downward Deviation from an ILS Glideslope	5	Yes	No
Voice Call-outs	6	Yes	Yes

Class B TAWS incorporates five types of alerting modes, FLTA, PDS and must include GPWS 1, 3 & 6.

Equipment Interface

	Class A	Class B
2D Terrain Display	Required	Optional
Air Data Computer (Note)	Required	Optional
ILS	Required	N/A
Annunciators	Required	Required
Audio System	Required	Required
GPS (approach certified)	Required	Required
Flap Position, Gear Position	Required	Optional
Weight on Wheels	Optional	Optional

Air Data Computer is required for Landmark TAWS8000, but no 8100

Aircraft Affected: Fixed Wing Turbine

	Class A	Class B
Part 121	All	****
Part 135	10 or more Pax seats	6-9 Pax Seats
Part 91	****	6 or more Pax Seats

Appendix 8

AMD Aircraft Rental Agreement (Maintenance Sections)

The following is a copy of the maintenance related Section B of the rental agreement as of January 2004. Be careful if "carding" a Special Mission aircraft for AMD. The basic requirements are provided in paragraphs B4 through B7, but the Supplements in B8 list additional requirements for the various Special Mission. For a current copy of the agreement go to: **http://www.oas.gov/west/fcc/ara-toc-w.htm**

B4. AIRCRAFT REQUIREMENTS
These standards are in addition to airworthiness requirements.

B4.1 Condition of Equipment

B4.1.1 Vendor-furnished aircraft and equipment shall be operable, free of damage, and in good repair. Aircraft systems and components shall be free of leaks except within limitations specified by the manufacturer.

B4.1.2 All windows and windshields must be clean and free of scratches, cracks, crazing, distortion, or repairs, which hinder visibility. Repairs such as safety wire lacing and stop drilling of cracks are not acceptable permanent repairs. Prior to acceptance, all temporarily repaired windows and windshields shall have permanent repairs completed or shall be replaced.

B4.1.3 The aircraft interior shall be clean and neat. There shall be no unrepaired tears, rips, cracks, or other damage to the interior. The exterior finish, including the paint, shall be clean, neat, and in good condition. Any corrosion shall be within manufacturer or FAA acceptable limits.

B4.1.4 Lap belt and shoulder harness condition. The following items are **NOT** acceptable:

B4.1.4.1 Webbing. Webbing that is frayed 5 percent or more, torn webbing, crushed webbing, swelled webbing that results in twice the thickness of original web, or if difficult to operate through hardware, creased webbing (no structural damage allowed), and sun deterioration if it results in severe fading, brittleness, discoloration, and stiffness.

B4.1.4.2 Hardware. Buckle or other hardware is inoperable, nylon bushing at shoulder harness-to-lap belt connection missing or damaged, fabricated bushings or tie wraps used as bushings, rust/corrosion if not minor in nature, wear beyond normal use.

B4.1.4.3 Stitches. Broken or missing stitches, severe fading or discoloring, inconsistent stitch pattern.

B4.1.4.4 TSO Tags (see FAR 21.607). Missing or illegible tags are unacceptable unless inspection can confirm the suitability of installed equipment.

B4.1.4.5 Age. Belts/fabric over 10 years from date of manufacture require close inspection because of the elements they are exposed to, but do not have to be replaced if it can be determined they are in serviceable condition and not life limited.

B4.2 Additional Equipment Requirements

B4.2.1 Fire extinguisher(s), as required by 14 CFR Part 135, shall be a handheld bottle, minimum 2- B:C rating, mounted and accessible to the flight crew while seated. The fire extinguisher shall

be maintained in accordance with *NFPA Manual #10, Standards for Portable Fire Extinguishers* or the Contractor's 135 operations manual.

B4.2.2 Airplanes: Shoulder harness and lap belt for front seat occupants and both occupants in tandem seat airplanes are required. The shoulder strap and lap belt shall fasten with a metal to metal, single-point, quick-release mechanism. Airplanes with a factory installed military type shoulder harness meet this requirement.

B4.2.3 Helicopters: A double strap shoulder harness with automatic or manual locking inertia reel for each front seat occupant is required. Shoulder straps and lap belts shall fasten with one single-point metal-to-metal, quick-release mechanism. Heavy -duty (military style) harnesses with fabric loop connecting the shoulder harness to the male portion of the lap belt buckle, similar to those installed in transport category helicopters, are acceptable.

Note: Effective January 1, 2006, single or double strap shoulder harness with automatic or manual inertia reel shall be required for all other occupants. Shoulder straps and lap belts shall fasten with one single point metal-to-metal, quick release mechanism.

B4.2.4 Helicopters: A digital hour meter is required. The meter shall be wired in series with a switch on the collective control, and a switch activated by engine or transmission oil pressure, or equivalent means, to record flight time for payment purposes.

B5. AVIONICS REQUIREMENTS

B5.1 The following avionics systems, as a minimum, shall be installed or available. The Vendor's avionics systems must comply with the performance requirements listed in AVIONICS OPERATIONAL TEST STANDARDS of December 1, 1998 (copies available upon request from the Contracting Officer or DO AM Avionics).

B5.2 Any digital aeronautical, mobile or portable VHF-FM radios furnished to meet requirements of the ARA shall also be APCO Project 25 compliant.

B5.3 One panel mounted VHF-AM aeronautical transceiver (VHF-1), operating in the frequency band of 118.000 to 135.975 MHz, with a minimum of 720 channels, and a minimum of 5 watts carrier output power.

B5.4 Airplanes: One automatic-portable/automatic-fixed or automatic-fixed Emergency Locator Transmitter (ELT), utilizing an external antenna and meeting the requirements of 14 CFR 91.207 (excluding section f.), shall be installed per the manufacturer's installation manual, in a conspicuous or marked location.

B5.5 Helicopters: One automatic-portable/automatic-fixed or automatic-fixed ELT, utilizing an external antenna and meeting the requirements of 14 CFR 91.207 (excluding section f.), shall be installed per the manufacturer's installation manual, in a conspicuous or marked location.

B5.6 Helicopters operating in Alaska and Hawaii: In lieu of the ELT requirement above, an automatic fixed ELT (ELT AF) meeting TSO-C91A or an ELT that requires tools to remove it from the aircraft may be acceptable when a handheld portable ELT/EPIRB is furnished. The ELT/EPIRB shall be compact and easily carried by the PIC. A handheld ELT/EPIRB such as Emergency Beacon Corporation's model EBC-102 with telescoping antenna, or Emergency Locator Products Corporation's model ELP-1000 meets this requirement.

B5.7 The Vendor shall allow installation of a Government Furnished Equipment (GFE) Automated Flight Following (AFF) system in the aircraft when requested by the government.

B5.8 Other avionics may be required for special-use missions. See the applicable Supplement.

B5.9 Avionics installation and maintenance standards:

B5.9.1 All avionics systems used in or on the aircraft for this contract and their installation and maintenance shall comply with all manufacturer's specifications and applicable Federal Aviation Regulations contained within 14 CFR regardless of any exclusions for public aircraft allowed in 14 CFR.

B5.9.2 Strict adherence to the recommendations in FAA AC 43.13-1B Chapter 11, "Aircraft Electrical Systems", and Chapter 12, "Aircraft Avionics Systems", as well as AC 43.13-2A Chapter 1, "Structural Data", Chapter 2, "Radio Installation", and Chapter 3, "Antenna Installation", is required.

B5.9.3 All Avionics systems requiring an antenna shall be installed with a properly matched, aircraft certified antenna unless otherwise specified. Antennas shall be polarized as required by the avionics system, and have a VSWR of 2.5 to 1 or better.

B5.9.4 Avionics equipment mounting location and installation shall not interfere with passenger safety, space, and comfort. Avionics equipment shall not be mounted under seats designed for deformation during energy attenuation. In all instances, the designated areas for collapse shall be protected. Avionics equipment normally operated by both pilot and observer/co-pilot (FM-1, AUX-FM, audio control system, etc.) shall be mounted in the optimum location for the make, model, and series of aircraft offered. Mounting(s) which offer full and unrestricted movement of each control to both the pilot and observer/co-pilot, when seated, without interference from clothing, cockpit structure, or flight controls, shall be a goal in the selection of location.

B6. MAINTENANCE REQUIREMENTS

B6.1 Aircraft shall be maintained in accordance with all applicable FAA Airworthiness Directives (AD), Mandatory Manufacturer's Bulletins, Vendor's Operations Specifications as required, or as identified by DOI AM.

B6.2 Maintenance Test Flight. A functional maintenance test flight shall be performed, at the Vendor's expense, following installation, overhaul, major repair, or replacement of any engine, propeller, rotor, primary flight control, or when requested by the CO. The result of this test flight shall be entered in the aircraft maintenance record by the pilot.

B7. FUEL AND SERVICING REQUIREMENTS

B7.1 All fuel must be commercial (or military) grade aviation fuel approved for use by the airframe and engine manufacturer.

B7.2 Government personnel (passengers) shall not be involved with any refueling of agreement aircraft.

B7.3 Aircraft shall not be refueled while engines are running and propellers/rotors are turning.

B7.4 Alaska fuel transfer equipment standards are as follows:

B7.4.1 Filtration must be sized to withstand fuel system pressures and flow rates.

B7.4.2 Filtration must meet one of the following qualifications: Institute of Petroleum (IP) Specifications ad Qualification Procedures-Aviation Fuel Monitors with Absorbent Type Elements, or API 1581 specifications and Qualification Procedures for Aviation Jet Fuel Filter/Separators. Some examples of IP qualified elements are Velcon CDF 210K, CDF 220K, ACO 51201K, ACO 21201K, ACO 40501SPK, and ACO 40901SPK.

B7.4.3 The filter vessel shall be placarded indicating the filter change date, element model number, vessel model number, and vessel and vessel and element manufacturer. Spare filters shall be available to allow periodic and emergency filter changes.

B7.4.4 Differential pressure gages must be installed on refueling systems operating at 25PSI and above. Filter change out shall be accomplished if differential pressure is 10 PSI or greater. Filter change out shall be accomplished annually unless early change out is warranted. The manufacturer's guidance for filter change related to contamination build up shall be adhered to.

B7.4.5 Refueling nozzles shall be aviation qualified with bonding wire, dust cap and 100-mesh screen installed. Hold open devices on overwing nozzles are prohibited.

B7.4.6 Refueling systems must have a ground reel with clip to allow system bonding with aircraft.

B7.4.7 Refueling systems must be designed to allow periodic removal of water and particulate contamination.

B7.4.8 Only hoses designed for dispensing the type of aviation fuel being utilized are acceptable. Hoses that comply with API BUL 1529 hose Type C, Type F and Type CT are known to meet this requirement. Hoses shall be kept in good repair and stored to prevent damage.

B7.4.9 Aircraft refueling hose shall meet API 1529 Type C or BS 3158 qualification.

B7.4.10 Filter vessel sumps shall be drained of water daily before system use.

B7.4.11 Water and particulate contamination shall be removed from refueling systems when detected.

B8. SUPPLEMENTS - This agreement incorporates in full text all supplements for which you are approved. Upon request, the CO shall make available ANY FURTHER Supplements referenced below (B8.1 – B8.19). The supplements impose special operational equipment and personnel requirements that are in addition to the basic ARA. The Vendor must be approved before conducting these activities.
.
When ordered for service under any of the following supplements, all requirements shall be adhered to in their entirety unless specifically authorized by the CO.

B8.1 Helicopter Class A, B & C External Load Including Long Line.
B8.2 Interagency Fire Helicopter Requirements.
B8.3 Local Fire Helicopter Requirements.
B8.4 Reserved.
B8.5 Resource Reconnaissance.
B8.6 Low Level Activities.
B8.7 Helicopter Offshore Platform/Vessel Landings and Extended Over Water.
B8.8 Fuel Servicing Vehicle.
B8.9 Airplane Wheel Operations on Unprepared Landing Areas.
B8.10 Paracargo.
B8.11 Aircraft Maintenance Personnel Requirements.
B8.12 Reserved.
B8.13 Reserved.
B8.14 Reserved.
B8.15 Interagency Air Tactical.
B8.16 Fire Reconnaissance.
B8.17 Reserved.
B8.18 Reserved.

Appendix 9

AMD Data Cards

OAS-36A (1/94)

INTERAGENCY DATA CARD
(Airplane)

Office of Aircraft Services

OAS-68 CONTROL NO._____

RENTAL NO._____

CONTRACT NO._____ ITEM NO._____

DESIGNATED BASE

OPERATOR_____
ADDRESS _____
_____
PHONE NO. (___)_____

MAKE AND MODEL _____
FAA REGISTRATION NO._____
MFG. SERIAL NO. _____
HOBBS/TACH READING _____

Authorized Uses: EXPIRES: _____

__PASSENGER (No. Pax__)(9P)
__CARGO(9C)
__SINGLE PILOT IFR (W/AUTOPILOT)
__LOW LEVEL(6)
__FIRE SURVEILLANCE/RECON(USFS ONLY)
__PARA CARGO(2P)
__SMOKEJUMPER(3D)
__OTHER:_____

APPROVED BY:(Signature) _____ DATE:_____
(Print Name) _____ REGION/AREA:_____

AIRCRAFT INFORMATION:
TOTAL AIRFRAME TIME_____
ENGINE MAKE & MODEL_____
ENGINE HOURS:
#1-TSN:_____TSO:_____HSI:_____
#2-TSN:_____TSO:_____HSI:_____
L/H PROP TSO _____O/H DATE_____
R/H PROP TSO _____O/H DATE_____
DATE OF LAST ANNUAL INSP/AAIP_____
TIME-LAST 100 HR/PHASE_____
AIRWORTHINESS & REGISTRATION_____
WEIGHING CONFIGURATION_____
DATE OF LAST ACTUAL WEIGHING_____
MAXIMUM GROSS WEIGHT_____
EQUIPPED WEIGHT_____
USEFUL LOAD_____
FLIGHT MANUAL/SUPPLEMENTS_____
TIME CHANGE & A.D. LIST_____
MAINTENANCE RECORDS_____

I. MANDATORY EQUIPMENT:	SATISFACTORY YES	NO
SHOULDER HARNESSES (FRONT)	___	___
SEAT BELTS	___	___
VHF COMM RADIO (720 CH) (1 OR 2 ?)	___	___
FIRE EXT. (MIN. 1.5 LB. B/C)	___	___
FIRST AID KIT	___	___
ELT (BATT DATE DUE_____)	___	___
LIGHTING--NIGHT OPERATIONS	___	___
AVIONICS INSTALL/MAINT STDS	___	___
NAV CHARTS/SUPPLEMENTS	___	___
II. LOW LEVEL		
___INTERPHONE--PILOT/OBS/1 AFT PAX	___	___
___JJ-033 AND JJ-034 JACKS	___	___
___INERTIA REELS (IF APPLICABLE)	___	___
___SURVIVAL KIT	___	___
___WHITE STROBE LIGHT(S)	___	___

Figure A9-1 – OAS 36A – Airplane Data Card (Front Side)

	SATISFACTORY YES	SATISFACTORY NO
III. MISCELLANEOUS EQUIPMENT:		
___CABIN HEATER		
___DEICE/ANTI-ICE		
___HAZ MAT BOOK W/EXEMP		
___DOUBLE-STRAP SHOULDER HARNESSES		
___SHOOTING DOOR/WINDOW		
___FLOATS: STANDARD_____ AMPHIBIOUS_____		
___SKIS: STRAIGHT_____ WHEEL SKIS_____		
___AUX FUEL TANKS		
___EXT. OVERWATER KIT (PART 135)		
___LIFE VEST - EACH OCCUPANT		
___COLD WEATHER EQUIPMENT		
OTHER (SPECIFY):		
___ _____		
___ _____		
___ _____		
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___ _____		
___ _____		

	SATISFACTORY YES	SATISFACTORY NO
IV. AVIONICS		
___VHF NAV (1 OR 2 ?)		
___ADF (1 OR 2 ?)		
___DME (1 OR 2 ?)		
___GLIDESLOPE		
___MARKER BEACON		
___HEADSETS		
___MICROPHONES		
___AVIONICS MASTER SWITCH		
___INTEGRATED AUDIO SYSTEM - NO. PANELS_____		
___INTERPHONE - NO. POSITIONS_____		
___HOT MIC/VOX		
___ATTITUDE INDICATOR		
___HORIZONTAL SITUATION INDICATOR		
___AUTOPILOT: NO. AXIS		
___TRANSPONDER - DATE DUE:_____		
___ALT ENCODER - DATE DUE:_____		
___PITOT/STATIC- DATE DUE:_____		
___LORAN-C: TYPE_____		
___GPS: TYPE_____		
___RMI: (NAV 1 OR 2 ?)		
___GYRO-STABILIZED MAG. COMPASS		
___RADAR ALTIMETER		
___WEATHER RADAR (STAB OR NON-STAB ?)		
___RADIO TRANSMIT PTT - NO. POSITIONS_____		
___VOLUME CONTROL - NO. POSITIONS_____		
___INTERNAL P.A.		
___TRANSMITTER SIDETONE		
___CROSS MONITOR AUDIO		
___VHF-FM RADIO- TYPE:_____		
___VHF-FM GUARD- FREQ:_____		
___32-TONE ENCODER		
___PROVISIONS FOR AUX-FM		
OTHER AVIONICS (SPECIFY):		
___ _____		
___ _____		
___ _____		
___ _____		
___ _____		
___ _____		

REMARKS: (AND/OR SEE OAS-68 FOR DEFICIENCIES)

_____

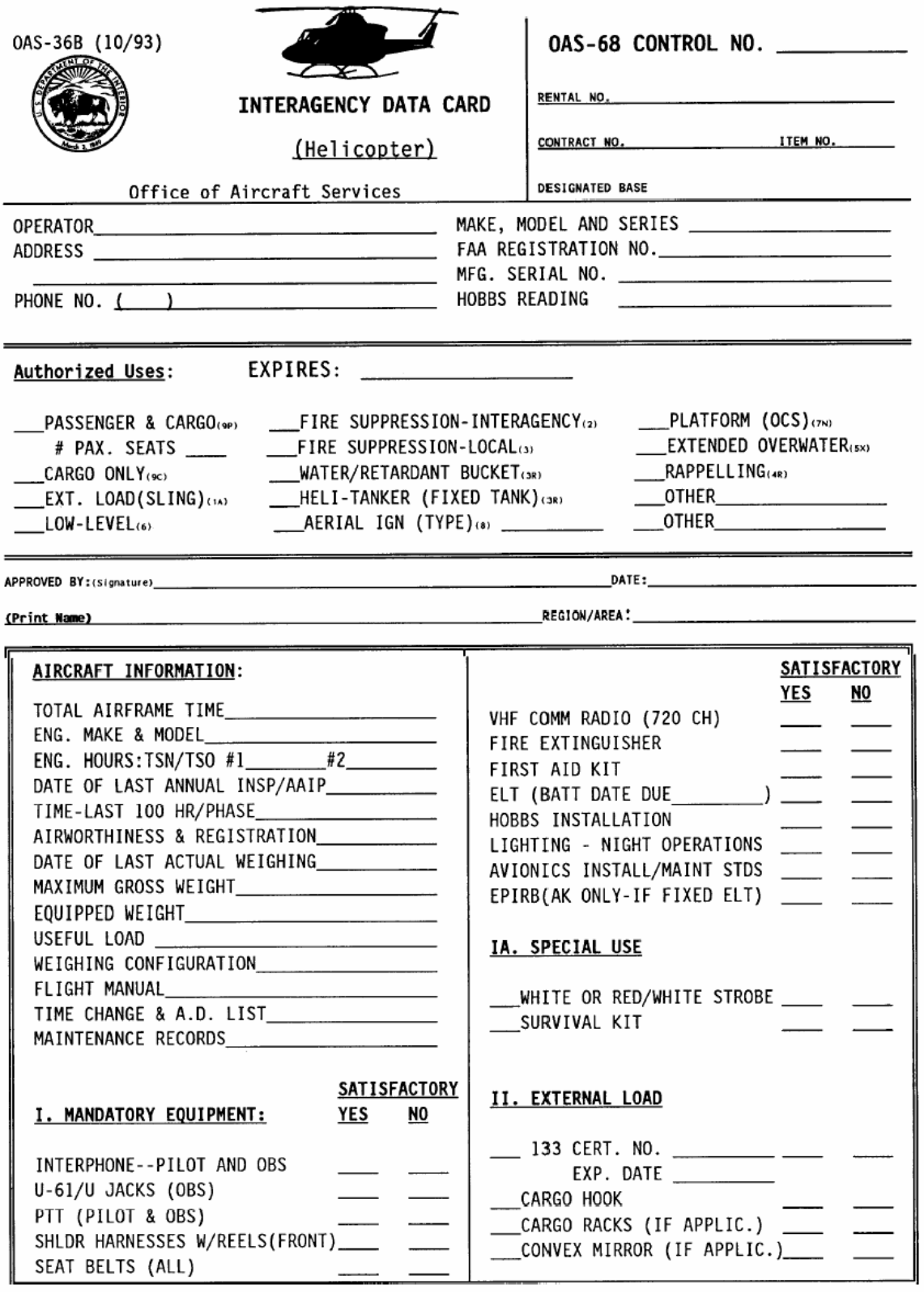
_____

_____

_____

_____

Figure A9-1 (Cont.) – OAS 36A – Airplane Data Card (Back Side)



OAS-36B (10/93)

INTERAGENCY DATA CARD

(Helicopter)

Office of Aircraft Services

OAS-68 CONTROL NO. _____

RENTAL NO. _____

CONTRACT NO. _____ ITEM NO. _____

DESIGNATED BASE _____

OPERATOR _____
ADDRESS _____
_____
PHONE NO. (___) _____

MAKE, MODEL AND SERIES _____
FAA REGISTRATION NO. _____
MFG. SERIAL NO. _____
HOBBS READING _____

Authorized Uses: EXPIRES: _____

___PASSENGER & CARGO(9P)
PAX. SEATS ____
___CARGO ONLY(9C)
___EXT. LOAD(SLING)(1A)
___LOW-LEVEL(6)
___FIRE SUPPRESSION-INTERAGENCY(2)
___FIRE SUPPRESSION-LOCAL(3)
___WATER/RETARDANT BUCKET(3R)
___HELI-TANKER (FIXED TANK)(3R)
___AERIAL IGN (TYPE)(8) _____
___PLATFORM (OCS)(7N)
___EXTENDED OVERWATER(5X)
___RAPPELLING(4R)
___OTHER _____
___OTHER _____

APPROVED BY:(Signature) _____ DATE: _____

(Print Name) _____ REGION/AREA: _____

AIRCRAFT INFORMATION:

TOTAL AIRFRAME TIME _____
ENG. MAKE & MODEL _____
ENG. HOURS:TSN/TSO #1 _____ #2 _____
DATE OF LAST ANNUAL INSP/AAIP _____
TIME-LAST 100 HR/PHASE _____
AIRWORTHINESS & REGISTRATION _____
DATE OF LAST ACTUAL WEIGHING _____
MAXIMUM GROSS WEIGHT _____
EQUIPPED WEIGHT _____
USEFUL LOAD _____
WEIGHING CONFIGURATION _____
FLIGHT MANUAL _____
TIME CHANGE & A.D. LIST _____
MAINTENANCE RECORDS _____

I. MANDATORY EQUIPMENT:	SATISFACTORY YES	NO
INTERPHONE--PILOT AND OBS	____	____
U-61/U JACKS (OBS)	____	____
PTT (PILOT & OBS)	____	____
SHLDR HARNESSES W/REELS(FRONT)	____	____
SEAT BELTS (ALL)	____	____

	SATISFACTORY YES	NO
VHF COMM RADIO (720 CH)	____	____
FIRE EXTINGUISHER	____	____
FIRST AID KIT	____	____
ELT (BATT DATE DUE _____)	____	____
HOBBS INSTALLATION	____	____
LIGHTING - NIGHT OPERATIONS	____	____
AVIONICS INSTALL/MAINT STDS	____	____
EPIRB(AK ONLY-IF FIXED ELT)	____	____

IA. SPECIAL USE

___WHITE OR RED/WHITE STROBE	____	____
___SURVIVAL KIT	____	____

II. EXTERNAL LOAD

___ 133 CERT. NO. _____ EXP. DATE _____	____	____
___CARGO HOOK	____	____
___CARGO RACKS (IF APPLIC.)	____	____
___CONVEX MIRROR (IF APPLIC.)	____	____

Figure A9-2 – OAS 36B – Helicopter Data Card (Front Side)

	SATISFACTORY YES	SATISFACTORY NO
NOTE: LOCAL FIRE REQUIREMENTS INCLUDE ALL PREVIOUS SECTIONS.		
III. LOCAL FIRE:		
___HIGH VISIBILITY MARKINGS- MAIN ROTOR BLADES		
___EXTENDED HEIGHT GEAR		
___PERSONNEL STEPS		
___WATER BUCKET TYPE_____ GALS_____ .		
___VHF-FM RADIO OR AUX-FM PROVISIONS		
NOTE: INTERAGENCY FIRE REQUIREMENTS INCLUDE ALL PREVIOUS SECTIONS, PLUS APPROVED SERVICE TRUCK.		
IV. INTERAGENCY FIRE:		
___NINE PIN CONNECTOR		
___HELITORCH WIRING		
___PREMO/INFRARED CONNECTOR		
___WATER BUCKET SW ON COLLECTIVE		
___WATER BUCKET LEVEL MARKINGS		
___BAGGAGE COMPARTMENT MOD/CARGO RACKS		
- INTERAGENCY FIRE AVIONICS -		
___VHF-FM RADIO TYPE_____		
___VHF-FM GUARD FREQ_____		
___32-TONE ENCODER		
___LORAN-C OR GPS TYPE_____		
___AUX-FM PROVISIONS		
___INTEGRATED AUDIO SYSTEM		
___AUDIO PANELS - (1 OR 2 ?)		
___INTERCOM - AFT EXITS		
___PTT - AFT PASSENGERS		
___HOT MIC/VOX (PILOT & OBS)		
___VOLUME CONTROL - ALL POSITIONS		
___PAX MONITOR OBS RCV AUDIO		
___TRANSMITTER SIDETONE		
___CROSS MONITOR AUDIO		
___U-61/U JACKS - AFT PAX		
___WIRING DIAGRAMS		
INTERAGENCY FIRE AVIONICS APPROVED BY:		
_____ NAME DATE		
REMARKS: (AND/OR SEE OAS-68 FOR DEFICIENCIES)		

	SATISFACTORY YES	SATISFACTORY NO
V. ADDITIONAL AVIONICS:		
___TRANSPONDER - DATE DUE:_____		
___PITOT/STATIC - DATE DUE:_____		
___ALTITUDE ENCODER - DATE DUE:_____ . . .		
___AVIONICS MASTER SWITCH		
___VHF NAV (1 OR 2 ?)		
___ADF (1 OR 2 ?)		
___DME		
___INTERCOM - ALL PASSENGERS		
___P.A./SIREN		
VI. MISCELLANEOUS EQUIPMENT:		
___FIXED RETARDANT TANK - TYPE_____ GALLONS_____		
___RANGE EXTENDER/AUX FUEL TANKS		
___LOCKING FUEL CAP		
___PARTICLE SEPARATOR/FILTER		
___CABIN HEATER/DEFOGGER		
___MAIN ROTOR BRAKE		
___LONG LINE		
___REMOTE HOOK		
___TUNDRA/SNOW PADS		
___DUAL CONTROLS		
___CONTRACT IN A/C		
___NAV CHARTS		
___HAZ. MAT. BOOK W/EXEMP.		
___ENGINE POWER CHECK FORMS		
___SHOOTING DOOR		
___FLOTATION GEAR-STANDARD		
___FLOTATION GEAR-POPOUT		
___LIFE VEST--EACH OCCUPANT		
___EXT. OVERWATER KIT (PART 135)		
___WIRE STRIKE PROTECTION		
___LOW VISIBILITY INSTRUMENTS (AK ONLY)		
___BARREL SLING(AK ONLY)		
___BARREL PUMP(AK ONLY)		
___SPARE PUMP FILTERS (2)(AK ONLY)		
OTHER (SPECIFY):		
___ _____		
___ _____		
___ _____		
___ _____		
___ _____		
___ _____		
___ _____		
___ _____		
___ _____		
___ _____		
___ _____		
___ _____		

Figure A9-2 (Cont.) – OAS 36B – Helicopter Data Card (Back Side)

OAS-36C (12/93)

INTERAGENCY DATA CARD
(Airtanker)
Office of Aircraft Services

CONTROL NO. _____

CONTRACT NO. _____ ITEM NO. _____

CONTRACT NO. _____ ITEM NO. _____

DESIGNATED BASE _____

OPERATOR _____ MAKE, MODEL, AND SERIES _____

ADDRESS _____ FAA REGISTRATION NO. _____

_____ MFG. SERIAL NO. _____

PHONE NO. (___) _____ TANKER NO. _____

Authorized Use: **EXPIRES:** _____

_____AIRTANKER-CAPACITY_____ OTHER_____

APPROVED BY: _____ REGION/AREA: _____ DATE: _____

AIRCRAFT INFORMATION:

TOTAL AIRFRAME TIME_____

ENGINE MAKE & MODEL_____

ENGINE	SERIAL NO.	TSMOH	TOTAL TIME
1.			
2.			
3.			
4.			
SPARE			

PROP	SERIAL NO.	TSMOH	TOTAL TIME
1.			
2.			
3.			
4.			

TOTAL TIME LAST INSP. _____
DATE OF LAST ANNUAL/AAIP _____
TIME-LAST 100 HR/PHASE _____
DATE RETARDANT TANK INSP _____
AIRCRAFT WEIGHING DATE _____
AIRCRAFT EMPTY WEIGH _____
MAXIMUM TAKEOFF WEIGH _____
MAXIMUM LANDING WEIGH _____
MAXIMUM ZERO FUEL WEIGH _____
NORMAL OPERATING WEIGH _____

I. EQUIPMENT:	SATISFACTORY YES	NO
AIRCRAFT RECORDS		
AIRWORTHINESS & REGISTRATION . . .	___	___
MAINTENANCE RECORDS	___	___
TIME CHANGE & A.D. LIST	___	___
MINIMUM EQUIPMENT LIST	___	___
RETARDANT TANK APPROVAL	___	___
WT.& BALANCE EQUIPMENT LIST	___	___
PITOT/STATIC-DATE DUE: _____ .	___	___
COMPASS SWING/CARD DATE _____ .	___	___
MECHANIC APPROVAL FORMS	___	___
II. FLIGHT DECK EQUIPMENT:		
___ SEAT BELTS	___	___
___ SHOULDER HARNESSES	___	___
___ INERTIA REELS	___	___
___ CREW/OBSERVER SEATS	___	___
___ FIRE EXTINGUISHER	___	___
___ FIRST AID KIT	___	___
___ SURVIVAL KIT	___	___
___ FLASHLIGHT, TWO D CELLS MINIMUM	___	___
___ FLIGHT MANUAL/SUPPLEMENTS . . .	___	___
___ COCKPIT CHECKLISTS	___	___
___ QUICK REFERENCE CHART	___	___
___ COPY OF CONTRACT IN AIRCRAFT .	___	___
___ APPROPRIATE NAV. PUBLICATIONS .	___	___
___ HAZ.MAT. BOOK/EXEMPTION	___	___

Figure A9-3 – OAS 36C – Airtanker Data Card (Front Side)

	SATISFACTORY YES	NO		SATISFACTORY YES	NO
III. EQUIPMENT:			**V. AVIONICS**		
___ POSITION LIGHTS			___ VHF COMM RADIO (720 CH) 2 REQUIRED		
___ RED & WHITE ANTI-COLLISION LIGHT			___ VHF-FM RADIO TYPE _____		
___ LANDING LIGHT(S)			___ GUARD FREQUENCY 1)_____2)_____		
___ WHITE STROBE LIGHT			___ 32 TONE ENCODER		
___ FLIGHT INSTRUMENTS FOR IFR FLIGHT			___ LORAN C TYPE _____		
___ SPARE FUSES			___ GPS TYPE _____		
___ ENGINE INSTRUMENTS			___ VHF NAV (1 OR 2)		
___ OUTSIDE AIR TEMP. GAUGE			___ GLIDESLOPE		
___ HEATED PITOT TUBE			___ MARKER BEACON		
___ FUEL GAGES			___ RADIO ALTIMETER		
___ PARKING BRAKE			___ RMI-NAV 1/NAV 2		
___ DEICE/ANTI-ICE EQUIPMENT			___ DME		
___ FUEL FLOW METER EACH ENGINE.			___ ADF (1 OR 2)		
___ DUAL POWER SOURCES EACH VAC./ELECT.SYSTEM			___ TRANSPONDER-DATE DUE: _____		
___ CONTRASTING PAINT SCHEME			___ ALT ENCODER-DATE DUE: _____		
___ QEC			___ ELT-TYPE _____ BATTERY DUE _____		
___ ENVIRONMENTAL PROTECTION OF STORED PARTS			___ PROVISIONS FOR AUX-FM		
___ DRIP PANS			___ INTEGRATED AUDIO SYSTEM		
___ FLUID ABSORBENT PADS			___ AUDIO PANELS ____		
___ EXTERNAL WEIGHT MARKINGS			___ TRANSMITTER SIDETONE		
___ PROPER MARKING OF FLUID OPENINGS			___ CROSS MONITOR AUDIO		
___ PROPER MARKING OF ALL CONTROLS			___ VOL. ALL POSITIONS		
___ _____			___ INTERPHONE PILOT/COPILOT AND OBSERVER		
___ _____			___ PTT ____ VOX ____ HOT MIKE ____		
___ _____			___ REC. AUDIO SELECTABLE BY OBS		
			___ HEADSETS ___		
IV. RETARDANT TANK			___ MICROPHONES ___		
			___ JJ-033 AND JJ-034 JACKS		
___ TANK DOORS ___ INDIVIDUAL DROPS			___ WIRING DIAGRAMS		
___ EMERGENCY DROP SYSTEM			___ _____		
___ BATCH FOAM BOTTOM LOADING			___ _____		
___ 2" KAMLOCK UNLOAD FITTING			___ _____		
___ DROP SELECTOR/INTERVALOMETER					
___ DOOR ARMING SWITCH					
___ DOOR ACTIVATION INDICATORS					
___ TANK LOADING LEVEL INDICATORS					
___ LEAK TEST					
___ _____					
___ _____					

REMARKS _____

Figure A9-3 (Cont.) – OAS 36C – Airtanker Data Card (Back Side)

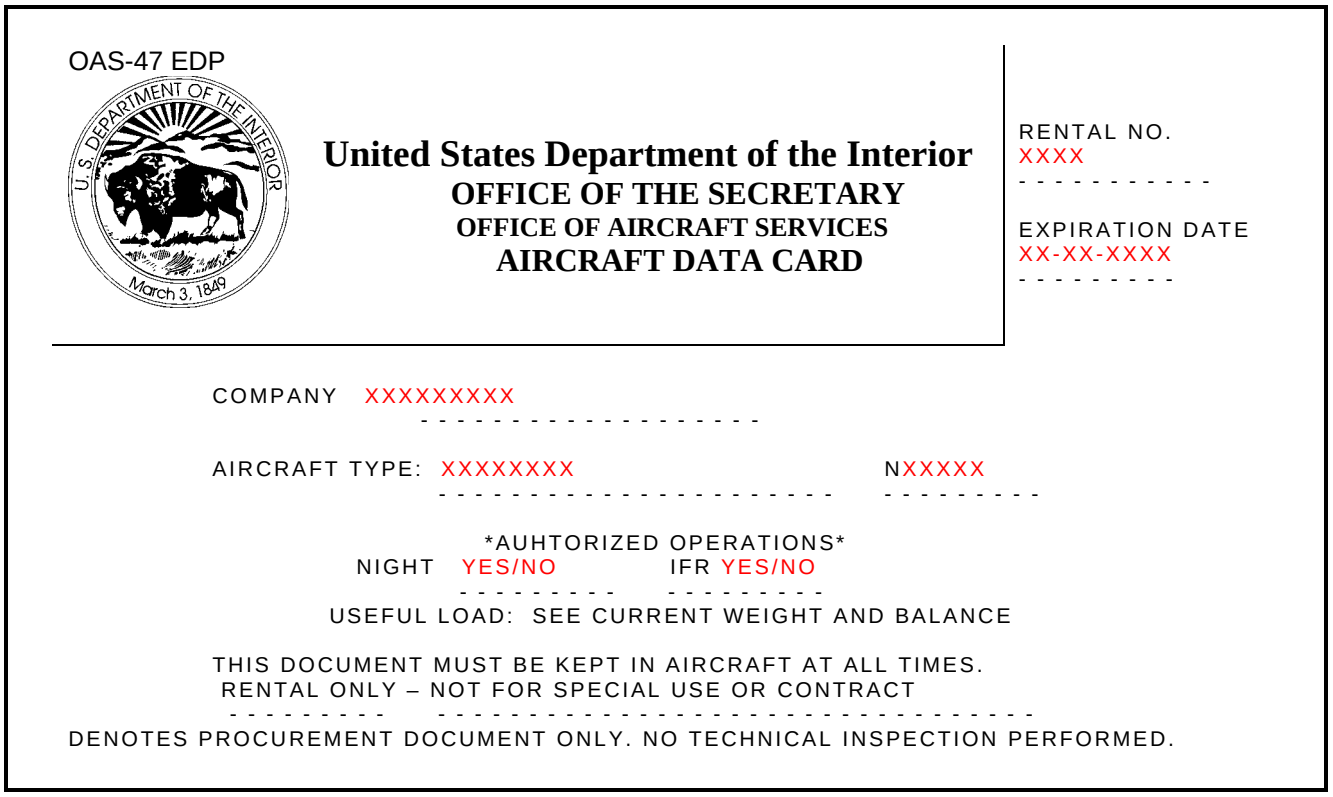


Figure A9-4 (Cont.) – OAS-47 – Point-to-Point Card

Appendix 10

Interagency Fire Helicopter Standards

In order to approve a helicopter Interagency it must meet the interagency standard. A current copy of the Interagency Fire Helicopter Standards can be found at: http://www.oas.gov/library/opm/06-21.PDF

United States Department of the Interior
National Business Center
Aviation Management
300 E. Mallard Dr., Ste 200
Boise, Idaho 83706-3991

DOI AM OPERATIONAL PROCEDURES (OPM) MEMORANDUM NO.06 21

Subject: Interagency Fire Helicopter Standards

Effective Date: January 1, 2006

Supersedes: OPM 05-21 dated January 1, 2004

Distribution: A, B, & C

Expiration: December 31, 2006

.1 Purpose. Appendix 1 of this OPM establishes policies and standards covering the present and future determination of equipment that constitutes an aircraft eligible for approval as an interagency fire helicopter; eligibility of pilots for approval as interagency fire helicopter pilots; and procedures for the conduct of interagency fire helicopter operations. Appendix 2 provides two (2) changes to the Interagency Helicopter Operations Guide (IHOG), which affects the length of long lines if used while conducting water bucket operations and establishes the requirement for pilots to be approved for vertical reference operations if long lines are used. Appendix 2 will be incorporated into the IHOG during the next publication of the entire manual. Appendix 3 establishes policy for the management of Type III helicopters operating on interagency fire missions. The Interagency Helicopter Operational Steering Committee will review these operations for inclusion in the 2005 revision to the *Interagency Helicopter Operations Guide*. Additional information regarding Interagency Fire Use of National Guard Helicopters is contained in OPM 41.

.2 Authority. Memorandum of Understanding between the United States Department of the Interior and the United States Department of Agriculture dated January 28, 1943, the Interagency Agreement dated November 25, 1985, and Secretarial Order 3250 dated September 30, 2003.

.3 Policy. This policy has been established pursuant to the "Interagency Fire Helicopter Standards" signed and dated by the Acting Director, Office of Aircraft Services, DOI and the Assistant Director, Fire & Aviation Management, U.S.D.A. Forest Service, on May 16, 2002. A copy of the standards is attached as Appendix 1.

_____
Associate Director

AVIATION MANAGEMENT COUNCIL

INTERAGENCY FIRE HELICOPTER STANDARDS

I. PURPOSE

To establish and document standards covering the present and future determination of:

1. Equipment that constitutes an aircraft eligible for approval as an Interagency Fire Helicopter.
2. Pilots that are eligible for approval as Interagency Fire Helicopter Pilots.
3. How Interagency Fire Helicopter operations will be conducted.

II. AUTHORITY

MEMORANDUM OF UNDERSTANDING between the United States Department of the Interior and the United States Department of Agriculture, dated January 28, 1943 and INTERAGENCY AGREEMENT dated November 25, 1985.

III. HELICOPTER EQUIPMENT

A. Basic Aircraft Equipment

1. Hobbs/Flight Hour Meter observable from the cockpit
2. Free air temperature gauge
3. Seat belts for all seats
4. Double strap shoulder harness, single point release in all front seats
5. Shoulder harnesses (either single-strap or double-strap) for each aft cabin occupant. Shoulder harness straps and lap belts shall fasten with a single-point, metal-to-metal, quick-release mechanism.
6. FAA approved fire extinguisher, 1.5 pounds minimum capacity
7. Dual controls (for flight checks only)
8. Lighting for night flight
9. White or red and white strobe light (white strobe may be in addition to other required anti-collision lighting)
10. High visibility marked rotor blades
11. High skid gear, if available
12. Convex mirror (not required for aircraft equipment for vertical reference operations)
13. Cargo hook
14. Personnel access step for aircraft with a floor height greater than 18 inches
15. Water/retardant bucket or tank
16. Collective mounted bucket/tank switch
17. Baggage compartment or cargo racks
18. Baggage compartment adequate for long handled tools
19. First aid kit
20. Survival kit
21. Standard three-pin connector for hand held IR or other equipment
22. Standard nine-pin connector for bucket/helitorch/remote hook

B. Avionics Equipment

1. Minimum, 720-channel VHF transceiver (760-channel effective 01/01/2005)
2. VHF-FM transceiver (wideband + narrowband, 10 watts, 32 CTCSS tones, 168.625 Mhz Guard)
3. Auxiliary FM provisions (10-pin connection to audio system, antenna w/BNC connector)
4. Dual audio systems for pilot and observer
5. 4-place ICS for pilot, observer/co-pilot, and two aft cabin exits

6. Hot Mic for pilot and observer/co-pilot
7. Push-to-talk (PTT) for radio + ICS for pilot (on cyclic) and observer/co-pilot (footswitch or cord-mounted), and ICS PTT (cord-mounted) for two aft exits
8. GPS (panel-mounted with external A/C antenna, hand held units prohibited)
9. ELT meeting 14 CFR 91.207, less section f. (TSO-C91a or TSO-C126 effective 01/01/2005)
10. U-92A/U audio connector jacks at all required positions
11. ATC transponder with altitude encoder
12. Pitot/static/altimeter and transponder/encoder maintained to IFR spec's

C. Fuel Service Vehicle (not required in Alaska)

1. Minimum capacity, eight hours fuel for assigned helicopter
2. 2 fire extinguishers each with a 20-B,C rating; one on each side of vehicle
3. Metered fuel dispensing
4. Placards in accordance with 49 CFR 172
5. Marked with fuel type
6. Sump with drain
7. Nozzle screen (splash refueling), nozzle dust protective device, nozzle bonding device
8. Bonding device, aircraft to fuel service vehicle
9. Fuel filtering system marked with filter change date
10. Spare filter
11. No smoking signs
12. Record for recording daily sump draining results as per procurement document
13. Spill containment material
14. Hoses compatible with aviation fuel being dispensed

IV. PILOT STANDARDS

A. Certification Standards

1. Commercial or Airline Transport Pilot Certificate with Rotorcraft/Helicopter rating
2. Class I or II FAA Medical Certificate
3. Contract/vendor pilots shall have a current FAA Form 8410-3 for passenger and internal cargo transport
4. Written evidence of authority to transport external loads

B. Experience Standards

1. Pilot in command, helicopters	1500 hours
2. Helicopter, preceding 12 months	100 hours
3. Weight Class	100 hours
4. Turbine engine for turbine aircraft operations	100 hours
5. Reciprocating engine for reciprocating engine operations	200 hours
6. Make and model	50 hours
7. Make, model and series, preceding 12 months	10 hours
8. Helicopter, last 90 days	Compliance with 14 CFR 61.57or 135.247 as appropriate.
9. Operating helicopters in mountainous terrain as identified in 14 CFR 95 Subpart B – Designated Mountainous Area. Operating includes, maneuvering and numerous takeoffs and landings.	200 hours
10. Designated Mountainous Area, make and model	10 hours

C. Personal Protective Equipment

1. Aviator's protective helmet
2. Fire-resistant clothing
3. Personal floatation device
4. Leather boots
5. Fire-resistant gloves

D. Duty Limitations

1. Maximum 14 hour duty day
2. Minimum 10 hours of rest between duty days
3. Maximum 8 hours of flight in a duty day
4. Flight time not to exceed 42 hours in any 6 consecutive days
5. If flight time exceeds 36 hours in 6 days, the next day is a required day off

V. OPERATIONAL STANDARDS

A. Aircraft

1. Passengers will be transported in aircraft with Standard Airworthiness Certificates and for contractors/vendors operating on a FAA Part 135 Certificate.
2. Aircraft certificated in restricted category will be limited to the transport of cargo and external loads.

B. Aircraft Maintenance

1. Aircraft will have been weighed within 24 months prior to the date of approval.
2. Aircraft will be on an approved maintenance program, 100-hour inspection schedule or other approved maintenance program.
3. Power assurance checks will be conducted, recorded, and trends monitored at least once each 10 flight hours.
4. Operators will provide a consolidated listing of component TBO and retirement items and their status.

C. Fuel, Fueling, and Lubricants

1. Only FAA/manufacturer approved aviation grade fuels and lubricants will be used.
2. Fueling operations shall comply with NFPA 407.

D. Operations - All operations will be conducted in accordance with the standards published in the Interagency Helicopter Operations Guide (IHOG).

VI. EFFECTIVE DATE, TERMINATION, AND CHANGES

These standards become effective on the date when all signatories have affixed their signatures. These standards may be changed at any time by mutual agreement of all signatory agencies.

Aviation Management Council

_____ _____	_____ _____
Mark L. Bathrick Date	Larry Brosnan Date
Associate Director	Assistant Director
Aviation Management Directorate	Fire & Aviation Management

Appendix 11

Regulatory Information & Federal Aviation Regulations

Subchapter A - Definitions

1 Definitions
3 General Requirements

Subchapter B – Procedural Rules

11 General Rulemaking Procedures
13 Investigative and Enforcement Procedures
14 Rules Implementing the Equal Access to Justice Act of 1980
15 Administrative Claims under Federal Tort Claims Act
16 Rules of Practice for Federally-Assisted Airport Enforcement Proceedings

Subchapter C – Aircraft

21 Certification Procedures for Products and Parts
23 Airworthiness Standards: Normal, Utility, Acrobatic, and Commuter Category Aircraft
25 Airworthiness Standards: Transport Category Aircraft
26 Continued Airworthiness and Safety Improvements for Transport Category Airplanes
27 Airworthiness Standards: Normal Category 29 Airworthiness Standards: Transport Category Rotorcraft
31 Airworthiness Standards: Manned Free Balloons
33 Airworthiness Standards: Aircraft Engines
34 Fuel Venting and Exhaust Emission Requirements for Turbine Powered Airplanes
35 Airworthiness Standards: Propellers
36 Noise Standards: Aircraft Type and Airworthiness Certifications
39 Airworthiness Directives
43 Maintenance, Preventative Maintenance, Rebuilding and Alteration
45 Identification and Registration Marking
47 Aircraft Registration
49 Recording of Aircraft Titles and Security Documents

Subchapter D – Airmen

61 Certification: Pilots, Flight Instructors, and Ground Instructors
63 Certification: Flight Crewmembers Other Than Pilots
65 Certification: Airmen Other Than Flight Crewmembers
67 Medical Standards and Certification

Subchapter E – Airspace

71 Designation of Class A, B, C, D and E Airspace Areas; Air Traffic Service Routes; and Reporting Points
73 Special Use Airspace
77 Objects Affecting Navigable Airspace

Subchapter F – Air Traffic and General Operating Rules

91 General Operating and Flight Rules
93 Special Air Traffic Rules and Airport Traffic Patterns
95 IFR Altitudes
97 Standard Instrument Approach Procedures
99 Security Control of Air Traffic
101 Moored Balloons, Kites, Unmanned Rockets and Unmanned Free Balloons
103 Ultralight Vehicles
105 Parachute Operations
107 Airport Security
108 Airplane Operator Security
109 Indirect Air Carrier Security

Subchapter G – Air Carriers and Operators For Compensation or Hire: Certification and Operations

119 Certification: Air Carriers and Commercial Operators 121Operating Requirements: Domestic, Flag and Supplemental Operations
125 Certification and Operations: Airplanes Having a Seating Capacity of 20 or More Passengers or a Maximum Payload Capacity of 6,000 Pounds or more; and Rules Governing Persons on Board Such Aircraft
129 Operations: Foreign Air Carriers and Foreign Operators of U.S.- Registered Aircraft Engaged in Common Carriage
133 Rotorcraft External-Load Operations
135 Operating Requirements: Commuter and On-Demand Operations and Rules Governing Persons on Board Such Aircraft
136 National Parks Air Tour Management
137 Agricultural Aircraft Operations
139 Certifications and Operations: Land Airport Serving Certain Air Carriers

Subchapter H – Schools and Other Certificated Agencies

141 Pilot Schools
142 Training Centers
145 Repair Stations
147 Aviation Maintenance Technician Schools

Subchapter I - Airports

150 Airport Noise Compatibility Planning
151 Federal Aid to Airports
152 Airport Aid Program
155 Release of Airport Property from Surplus Property Disposal Restrictions
156 State Block Grant Pilot Program
157 Notice of Construction, Alteration, Activation, and Deactivation of Airports
158 Passenger Facility Charges (PFCs)
161 Notice and Approval of Airport Noise and Access Restrictions
169 Expenditure of Federal Funds for Nonmilitary Airports or Air Navigation Facilities Thereon

Subchapter J – Navigational Facilities

170 Establishment and Discontinuance Criteria for Air Traffic Control Services and Navigational Facilities
171 Non-Federal Navigation Facilities

Subchapter K – Administrative Regulations

183 Representatives of the Administrator
185 Testimony by Employees and Production of Records in Legal Proceedings, and Service of Legal Process and Pleadings
187 Fees
189 Use of Federal Aviation Administration Communications Services
191 Protection of Sensitive Security Information
193 Protection of Voluntary Submitted Information

Subchapter N – War Risk Insurance

198 Aviation Insurance
199

UNDERSTANDING FAR REFERENCES

Chapter 14 CFR, Subchapter F, Part 91, Subpart C, 91.207(f)(10)

Chapter – 14 CFR (see 21.305)
Subchapter – Subchapter F of 14 CFR contains Part 91 (See 21.17(a)(1))
Part – Part 91 concerns General Operating and Flight Rules (see 43.3(a))
Subpart – Subpart C of Part 91 deals with Equipment Requirements (see 91.401(a))
Section – Section 91.207 covers ELT's (see 91.213(a))
Paragraph – Paragraph 91.207(f) concerns which aircraft do not need ELT's (see 91.213(d))
Subparagraph – Subparagraph 91.207(f)(10) deals with removed ELT's (see 91.203(a)(1))

§ - Used for specific references at *or* below the section level, when a reference is cited which is not in the Part, Section or Paragraph you are currently reading.
(i.e. 91.1 references §91.701; or 91.9 references §21.5; §§ for multiple references)

Civil Aviation Regulations (CAR)

1 Certification, Identification and Marking of Aircraft and Related Parts **(1938) (FAR 21)**
2 Aircraft Identification Mark **(effective 1938) (FAR 45)**
3 Aircraft Airworthiness – Normal, Utility, Acrobatic & Restricted Purposes Categories **(effective 1949) (FAR 23)**
4 Airplane Airworthiness **(effective 1937)**
4a Airplane Airworthiness **(<12,500) (effective 1947) (FAR 23)**
4b Airplane Airworthiness; Transport Categories **(FAR 25) (effective 1953)**
5 Glider Airworthiness **(effective 1952)**
6 Rotorcraft Airworthiness; Normal Category **(effective 1946) (FAR 27)**
7 Rotorcraft Airworthiness; Transport Category **(effective 1956) (FAR 29)**
8 Aircraft Airworthiness; Restricted Category **(effective 1950)**
9 Aircraft Airworthiness; Limited Category **(effective 1946)**
10 Certification and Approval of Import Aircraft and Related Parts **(effective 1955)**
13 Aircraft Engine Airworthiness **(effective 1937) (FAR 33)**
14 Aircraft Propeller Airworthiness **(effective 1937) (FAR 35)**
15 Aircraft Equipment Airworthiness **(effective 1937)**
16 Aircraft Radio Equipment Airworthiness **(effective 1941)**
17 Aircraft Instrument Airworthiness **(effective 1942)**
18 Repair and Alteration of Aircraft **(effective 1937) (FAR 43)**

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*.

Serious injury means any injury which: **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.

AIRWORTHINESS CERTIFICATES

STANDARD (§21.175(a) & §21.183)				
Airplane Categories	**FAR Part**	**Weight**	**Passenger Seats**	**Other**
Normal	23	12,500 or Less	9 or Less	N/A
Utility	23	12,500 or Less	9 or Less	Limited Acrobatic
Acrobatic	23	12,500 or Less	9 or Less	Unlimited Acrobatic
Commuter	23	19,000 or Less	19 or Less	Multi-Engine Propeller
Transport	25	12,500 or More	N/A	Turbine
Transport	25	19,000 or More	N/A	Propeller
Transport	25	N/A	10 or More	Turbine
Transport	25	19,000 or More	20 or More	Multi-Engine Propeller
Rotorcraft Categories	**FAR Part**	**Weight**	**Passenger Seats**	**Other**
Normal	27	6,000 or Less	N/A	**Before 10/18/1999**
Normal	27	7,000 or Less	9 or Less	**After 10/18/1999**
Transport	29	6,000 or More	N/A	**Before 10/18/1999**
Transport	29	7,000 or More	N/A	**After 10/18/1999**

SPECIAL §21.175(b)	
Categories	**Reference**
Primary	§21.184
Restricted	§21.185
Limited	§21.189
Light Sport	§21.190
Provisional	§§21.211 – 21.225
Special	§§21.197 – 21.199
Experimental	§§21.191 – 21.195

ROTORCRAFT TRANSPORT CATEGORIES

Weight	**Passenger Seats**	**Engine(s)**	**Category**	
			A	**B**
20,000 or More	10 or More	Must Have 2	**X**	**-**
20,000 or More	9 or Less	1	**-**	**X**
20,000 or More	9 or Less	2	**Either**	
20,000 or Less	10 or More	2	**Either**	
20,000 or Less	9 or Less	1	**-**	**X**
20,000 or Less	9 or Less	2	**Either**	

Operations Specifications

D072 Continuous Airworthiness Maintenance Program Authorization

D073 Approved Aircraft Inspection Program (AAIP)

D074 Reliability Program Authorization – Entire Aircraft
D075 Reliability Program Authorization – (Parts of Aircraft)
D076 Short Term Escalation
D084 Special Flight Permits

D085 Aircraft Listing

D088 Maintenance Time Limitations Authorization
D089 Maintenance Time Limitations Section

D095 Minimum Equipment List (MEL) Authorization

D101 Additional Maintenance Requirements – Aircraft Engine, Propeller, and Propeller Control (Governor)

D102 Additional Maintenance Requirements – Rotor

D104 Additional Maintenance Requirements – Emergency Equipment

D485 Aging Airplane Inspection and Records Review

A015 Autopilot in Lieu of Required Second-in-Command

FAA Order 8300.10

FAA Order 8300.10 has been rescinded, and had been replaced by **Order 8900.1, Flight Standards Information Management System (FSIMS)**, which incorporated the entire content of 8300.10, 8400.10 and 8700.10. It is now only available on line at http://fsims.faa.gov. The following list is provided for those with copies of the old 8300.10, which have a lot of valuable information in print. You will find that the guidance provided in FSIMS is essentially the same as found in the old 8300.10.

This list is not all inclusive, but does provide a listing of some of the more pertinent Chapters found in the 8300.10.

Volume 1

Chapter 9 – Exemptions, Deviations, Waivers and Authorizations

Volume 2, Certification

Chapter 1 – Perform Field Approval of Major Repairs and Major Alterations
Chapter 7 – Minimum Equipment Lists and Configuration Deviation Lists
Chapter 36 – Evaluate/Inspect FAR Part 91 Operators Aircraft
Chapter 68 – Evaluate Part 135 (9 or Less) Operator
Chapter 75 – Evaluate Part 135 (9 or Less) Weight and Balance Control Procedures
Chapter 83 – Evaluate Part 135 (9 or Less) Approved Aircraft Inspection Program
Chapter 84 – Part 121/125/135 Operations Specifications
Chapter 91 – Evaluate Part 135 (9 or Less) Operator/Applicants Inspection and Maintenance Requirements
Chapter 92 – Evaluate Part 135 411(a)(1) Operator's Maintenance
Chapter 93 – Evaluate Part 135 411(a)(1) Manual/Revision
Chapter 136 – Evaluate FAR Part 133 Operator
Chapter 147 – Evaluate FAR Part 137 Operator
Chapter 211 – Conduct an Accident Investigation
Chapter 227 – Evaluate Applicant's Refueling Procedures and Facilities
Chapter 236 – Evaluate Avionics Test Equipment

Volume 3, Aircraft and Equipment

Chapter 2 – Conduct Spot Inspection of Operator's Aircraft
Chapter 3 – Conduct Ramp Inspection of Operator's Aircraft
Chapter 10 – Conducting Records Reviews and Aircraft Inspections Mandated by Aging Aircraft Rules
Chapter 26 – Monitor FAR Part 91 Owner's Inspection Program
Chapter 27 – Inspect Part 91 Maintenance Records
Chapter 39 – Inspect FAR Part 135 (9 or Less) Air Carrier
Chapter 41 – Inspect Section 135.411(a)(1) Operator's Maintenance Records
Chapter 82 – Inspect a Repair Station's Certificate Requirements

Chapter 83 – Inspect a Repair Station's Record System
Chapter 84 – Inspect a Repair Station's Manual System
Chapter 85 – Inspect a Repair Station's Housing and Facilities
Chapter 86 – Inspect a Repair Station's Tool's and Equipment
Chapter 87 – Inspect a Repair Station's Technical Data
Chapter 88 – Inspect a Repair Station's Quality Control System
Chapter 89 – Inspect a Repair Station's Parts and Material Program
Chapter 90 – Inspect a Repair Station's Personnel
Chapter 92 – Inspect a Repair Station's Training Program
Chapter 93 – Inspect a Repair Station's Maintenance Process
Chapter 94 – Inspect a Repair Station's and Its Authorization for Work Away from Its Fixed Location
Chapter 95 – Inspect a Repair Station's Contract Maintenance Program
Chapter 96 – Inspect a Repair Station for Maintenance/Alterations Performed for Part 121, 125,129 and 135 Certificate Holders
Chapter 97 – Inspect Part 145 Repair Stations within the United States
Chapter 131 – Inspect Operator's Maintenance Facility
Chapter 135 – Monitor Operator's Refueling Procedures

Volume 4

Chapter 4 – Testing of Powerplants after Overhaul
Chapter 7 – Powerplant Repairs
Chapter 9 – Restricted Category Agricultural Airplanes
Chapter 12 – Air Carrier and Air Agency Control and Handling of Aircraft Components or Consumable Materials that contain Hazardous Material

Appendix 1 – Acronyms and Abbreviations

Advisory Circulars

The following is NOT a complete list of available Advisory Circulars

AC 00-33A	Nickel-Cadmium Battery Operational, Maintenance, and Overhaul Practices
AC 00-34A	Aircraft Ground Handling and Servicing
AC 00-41B	FAA Quality Control System Certification Program
AC 00-44II	Status of Federal Aviation Regulations
AC 00-46D	Aviation Safety Reporting Program
AC 00-58A	Voluntary Disclosure Reporting Program
AC 00.1-1	Government Aircraft Operations
AC 00.2-15	Advisory Circular Checklist and Status of Other FAA Publications
AC 11-2A	Notice of Proposed Rulemaking Distribution System
AC 20-24B	Qualification of Fuels
AC 20-29B	Use of Aircraft Fuel Anti-icing Additives
AC 20-30B	Aircraft Position Light and Anti-collision Light Installations
AC 20-33B	Technical Information Regarding Civil Aeronautics Manuals 1, 3, 4a, 4b, 5, 6, 7, 8, 9, 13, and 14
AC 20-36T	Technical Standard Order Index of Articles
AC 20-37E	Aircraft Propeller Maintenance
AC 20-41A	Substitute Technical Standard Order (TSO) Aircraft Equipment
AC 20-42C	Hand Fire Extinguishers for Use in Aircraft
AC 20-43C	Aircraft Fuel Control
AC 20-44	Glass Fiber Fabric for Aircraft Covering
AC 20-45	Safetying of Turnbuckles on Civil Aircraft
AC 20-47	Exterior Colored Band around Exits on Transport Airplanes
AC 20-48	Practice Guide for Decontaminating Aircraft
AC 20-52	Maintenance Inspection Notes for Douglas DC 6/7 Series Aircraft
AC 20-60	Accessibility to Excess Emergency Exits
AC 20-62D	Eligibility, Quality, & Identification of Aeronautical Replacement Parts
AC 20-64	[Large AC] Maintenance Inspection Notes for Lockheed L-188 Series Aircraft
AC 20-65A	U.S. AIRWORTHINESS CERTIFICATES AND AUTHORIZATIONS FOR OPERATION OF DOMESTIC AND FOREIGN AIRCRAFT
AC 20-69	Conspicuity of Aircraft Instrument Malfunction Indicators
AC 20-71	Dual Locking Devices on Fasteners
AC 20-74	Aircraft Position and Anti-collision Light Measurements
AC 20-76	Maintenance Inspection Notes for Boeing
AC 20-77A	Use of Manufacturers'
AC 20-88A	Guidelines on the Marking of Aircraft
AC 20-94A	Digital Clock Installation in Aircraft
AC 20-96	Surplus Military Aircraft: A Briefing for Prospective Buyers
AC 20-97B	Aircraft Tire Maintenance and Operational Practices
AC 20-99	Antiskid and Associated Systems
AC 20-103	Aircraft Engine Crankshaft Failure

AC 20-105B	Reciprocating Engine Power-Loss Accident Prevention and Trend Monitoring
AC 20-106	Aircraft Inspection for the General Aviation Aircraft Owner
AC 20-107A	Composite Aircraft Structure
AC 20-109A	Service Difficulty Program (General Aviation)
AC 20-110L	Index of Aviation Technical Standard Orders
AC 20-114	Manufacturers' Service Documents
AC 20-116	Marking Aircraft Fuel Filler Openings with Color Coded Decals
AC 20-119	Fuel Drain Valves
AC 20-122A	Anti-misfueling Devices: Their Availability and Use
AC 20-125	Water in Aviation Fuels
AC 20-132	Public Aircraft
AC 20-142	Eligibility and Evaluation of U.S. Military Surplus Flight Safety Aircraft Parts, Engines, and Propellers
AC 20-143	Installation, Inspection, and Maintenance of Controls for General Aviation Reciprocating Aircraft Engines
AC 20-154	Guide for Developing a Receiving Inspection System for Aircraft Parts and Material
AC 21-1B	Production Certificates
AC 21-4B	Special Flight Permits for Operation of Overweight Aircraft
AC 21-9A	Manufacturers Reporting Failures, Malfunctions, or Defects
AC 21-12B	Application for U.S. Airworthiness Certificate, FAA Form 8130-6
AC 21-13	Standard Airworthiness Certification of Surplus Military Aircraft and Aircraft Built from Spare and Surplus Parts
AC 21-16E	RTCA, Inc. Document RTCA/DO-160E, Environmental Conditions and Test Procedures for Airborne Equipment
AC 21-17	Carriage of Cargo in Restricted Category Aircraft and Other Special Purpose Operations
AC 21-23B	Airworthiness Certification of Civil Aircraft, Engine, Propellers, and Related Products Imported to the United States
AC 21-25A	Approval of Modified Seats and Berths
AC 21-29C	Detecting and Reporting Suspected Unapproved Parts
AC 21-33	Quality Assurance of Software used in Aircraft of Related Products
AC 21-34	Shoulder Harness-Safety Belt Installations
AC 21-35	Computer Generated/Stored Records
AC 21-40A	Guide for Obtaining a Supplemental Type Certificate
AC 21-41A	Replacing MIL-S-8879C With SAE AS8879
AC 21.25-1	Issuance of Type Certificate: Restricted Category Agricultural Airplanes
AC 21.101-1	Establishing the Certification Basis of Changed Aeronautical Products
AC 23-2A	Flammability Tests
AC 23-10	Auxiliary Fuel Systems for Reciprocating and Turbine Powered Part 23 Airplanes
AC 23-13A	Fatigue, Fail-Safe, and Damage Tolerance Evaluation of Metallic Structure for Normal, Utility, Acrobatic, and Commuter Category Airplanes
AC 23-21	Airworthiness Compliance Checklists Used to Substantiate Major Alterations for Small Airplanes
AC 23-22	Guidance for Approved Model List (AML) Supplemental Type Certificated (STC) Approval of Part 23 Airplane Avionics Installations
AC 23-24	Airworthiness Compliance Checklists for Common Part 23 Supplemental Type Certificate (STC) Projects

AC 23.607-1	Self-Locking Nuts on Bolts Subject to Rotation
AC 23.1309-1C	Equipment, Systems, and Installations in Part 23 Airplanes
AC 25-7A	Flight Test Guide for Certification for Transport Category Airplanes
AC 25-8	Auxiliary Fuel Systems Installations
AC 25-10	Guidance for Installation of Miscellaneous, Non-required Electrical Equipment
AC 25-16	Electrical Fault and Fire Prevention and Protection
AC 25-19	Certification Maintenance Requirements
AC 25-21	Certification of Transport Airplane Structure
AC 25-22	Certification of Transport Airplane Mechanical Systems
AC 25.571-1C	Damage Tolerance and Fatigue Evaluation of Structure
AC 25.613-1	Material Strength Properties and Material Design Values
AC 25.775-1	Windows and Windshields
AC 25.783-1A	Fuselage Doors and Hatches
AC 25.853-1	Flammability Requirements for Aircraft Seat Cushions
AC 25.869-1	Electrical System Fire and Smoke Protection
AC 25.905-1	Minimizing the Hazards from Propeller Blade and Hub Failures
AC 25.939-1	Evaluating Turbine Engine Operating Characteristics
AC 25.963-1	Fuel Tank Access Covers
AC 25.1353-1	Electrical Requirement and Installations
AC 25.1357-1	Circuit Protective Device Accessibility
AC 25.1529-1	Instructions for Continued Airworthiness of Structural Repairs on Transport Airplanes
AC 25.1581-1	Airplane Flight Manual
AC 27-1B	[Large AC] Certification of Normal Category Rotorcraft [All changes incorporated]
AC 29-2C	[Large AC] Certification of Transport Category Rotorcraft [All Changes incorporated]
AC 33-2B	Aircraft Engine Type Certification Handbook
AC 33-6	Weld Repair of Aluminum Crankcases and Cylinders of Piston Engines
AC 33-83A	Turbine Engine Vibration Test
AC 33.63-1	Turbine Engine Vibration
AC 33.65-1	Surge and Stall Characteristics of Aircraft Turbine Engines
AC 33.90-1	Initial Maintenance Inspection (IMI), 14 CFR §33.90, Test for Turbine Engines
AC 34-1B	Fuel Venting and Exhaust Emission Requirements for Turbine Engine Powered Airplanes
AC 35.4-1	Propeller Instructions for Continued Airworthiness
AC 39-1A	JIG Fixtures; Replacement of Wing Attach Angles and Doublers on Douglas DC-3 Series Aircraft, Airworthiness Directive 66-18-2
AC 39-7C	Airworthiness Directives
AC 39-8	Continued Airworthiness Assessments of Powerplant and Auxiliary Power Unit Installations of Transport Category Airplanes
AC 43-4A	[Large AC] Corrosion Control for Aircraft
AC 43-7	Ultrasonic Testing for Aircraft
AC 43-9C	Maintenance Records
AC 43-10B	United States - Canadian BASA/MIP Maintenance
AC 43-11	Reciprocating Engine Overhaul Terminology and Standards
AC 43-12A	Preventive Maintenance
AC 43-17	Methods, Techniques, and Practices Acceptable to the Administrator Governing the Installation, Removal, or Change of Identification Data and Identification Plates

AC 43-18	Fabrication of Aircraft parts by Maintenance Personnel
AC 43-204	Visual Inspection for Aircraft
AC 43-205	Guidance for Selecting Chemical Agents and Processes for De-painting and General Cleaning of Aircraft and Aviation Products
AC 43-210	Standardized Procedures for Requesting Field Approval of Data, Major Alterations, and Repairs
AC 43-211	Recommended Alternative Inspection Schedule for Socata TBM-700 Aircraft
AC 43.9-1F	Instructions for Completion of FAA Form 337
AC 43.13-1B	[Large AC. This includes Change 1.] Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair
AC 43.13-2A	[Large AC] Acceptable Methods, Techniques, and Practices - Aircraft Alterations
AC 45-2C	Identification and Registration Marking
AC 45-3	Installation, Removal, or Change of Identification Data and Identification Plates on Aircraft
AC 60-6B	Airplane Flight manuals (AFM), Approved Manual Materials, Markings, and Placards Airplanes
AC 65-2D	Airframe and Powerplant Mechanics Certification Guide
AC 65-9A	[Large AC] Airframe and Powerplant Mechanics General Handbook
AC 65-12A	[Large AC] Airframe and Powerplant Mechanics Powerplant Handbook
AC 65-13AA	FAA Inspection Authorization Directory
AC 65-15A	[Large AC] Airframe and Powerplant Mechanics Airframe Handbook
AC 65-24	Certification of a Repairman (General)
AC 65-31A	Training, Qualification, and Certification of Nondestructive Inspection (NDI) Personnel
AC 90-75	Strobe Light System Inspection
AC 90-87	Helicopter Dynamic Rollover
AC 90-95	Unanticipated Right Yaw in Helicopters
AC 91-26	Maintenance and Handling of Air-driven Gyroscopic Instruments
AC 91-32B	Safety in and Around Helicopters
AC 91-59A	Inspection and Care of General Aviation Aircraft Exhaust Systems
AC 91-60	The Continued Airworthiness of Older Airplanes
AC 91-67	Minimum Equipment Requirements for General Aviation Operations Under FAR Part 91
AC 120-16D	Air Carrier Maintenance Programs
AC 120-17A	Maintenance Control by Reliability Methods
AC 120-27E	Aircraft Weight and Balance Control
AC 120-30A	Reporting Requirements of Air Carriers, Commercial Operators, Travel Clubs, and Air Taxi Operators of Large and Small Aircraft
AC 120-49	Certification of Air Carriers
AC 120-72	Maintenance Resource Management Training
AC 120-73	Damage Tolerance Assessment of Repairs to Pressurized Fuselages
AC 120-77	Maintenance and Alteration Data
AC 120-79	Developing and Implementing a Continuing Analysis and Surveillance System
AC 120-84	Aging Airplane Inspections and Records Reviews
AC 120-85	Air Cargo Operations
AC 121-16	Maintenance Certification Procedures
AC 121-21B	Information Guide for Training Programs and Manual Requirements in the Air Transportation of Hazardous Materials

AC 133-1A	Rotorcraft External-Load Operations in Accordance with Federal Aviation Regulations Part 133
AC 135-4A	Aviation Security: Air Taxi Commercial Operators (ATCO)
AC 135-7	FAR 135: Additional Maintenance Requirements for Aircraft Type Certificated for Nine or Less Passenger Seats
AC 135-10A	Approved Aircraft Inspection Program
AC 135-13P	FAA Certificated Air Carriers Directory
AC 137-1	Agricultural Aircraft Operations
AC 140-7S	FAA Certificated Repair Stations Directory
AC 145-4A	Inspection, Retread, Repair, and Alterations of Aircraft Tires
AC 145-5	Repair Station Internal Evaluation Programs
AC 145-6	Repair Stations for Composite and Bonded Aircraft Structure
AC 145-9	Guide for Developing and Evaluating Repair Station and Quality Control Manuals
AC 145-10	Repair Station Training Program

FAR Quick Reference

- a -

advisory lights	*see warning lights*
aging aircraft inspections	*see inspections, aging aircraft*
agricultural operating certificates	137.33(a)
air carrier	-----
certification requirements	119.5
definition	1
displaying of names & certificate numbers	119.9(b)
management personnel	119.69
operating certificates	119.5, 119.33)b)
operations specifications	119.7, 119.33(b) *also see operations specifications*
use of business names	119.9(a), 133.11, 137.55
aircraft records	-----
airworthiness directives (AD)	91.417(a)(2)(v)
inspection status	91.417(a)(2)(iv)
life limited parts	91.417(a)(2)(ii)
major alterations	91.417(a)(2)(vi)
manifests, multi-engine aircraft	135.63(c)
overhauls	43.2(a), 91.417(a)(2)(iii)
rebuilt engine records	43.2(b), 91.421
records of maintenance, inspection, etc.	91.417(a)(1), 135.65(c), 135.443
required documentation	91.417(a)(1), (2), 135.65(a), 135.443
required on-board aircraft	135.65(a)
retention of records	91.417(b), 145.219(c)
total time in service	91.417(a)(2)(i)
airplane categories	-----
acrobatic	23.3(c)
commuter	23.3(d)
normal	23.3(a)
transport	21
utility	23.3(b)
airspeed indicator systems	23.1323
markings	23.1545
airworthiness certificates	----
agricultural aircraft	137.33(b)
displaying in aircraft	91.203(a)(1), (b)
issuance of restricted category certificates	21.185
issuance of standard category certificates	21.183
on-board aircraft	91.203(a)(1)

- f -

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Technical Standard Orders

TSO #	Title	Date
TSO-C1D	Cargo Compartment Fire Detection Instruments	08/19/2004
TSO-C2d	AIRSPEED INSTRUMENTS	06/14/1989
TSO-C3d	TURN AND SLIP INSTRUMENT	06/14/1989
TSO-C4c	BANK AND PITCH INSTRUMENTS	04/01/1959
TSO-C5e	DIRECTION INSTRUMENT, NON-MAGNETIC (GYROSCOPICALLY STABILIZED)	06/14/1989
TSO-C6d	DIRECTION INSTRUMENT, MAGNETIC (GYROSCOPICALLY STABILIZED)	06/14/1989
TSO-C7d	Direction Instrument, Magnetic Non-Stabilized Type (Magnetic Compass)	06/14/1989
TSO-C8d	VERTICAL VELOCITY INSTRUMENTS (RATE-OF-CLIMB)	08/08/1991
TSO-C9c	AUTOMATIC PILOTS	09/16/1960
TSO-C10A	Altimeter, Pressure Actuated, Sensitive Type	01/02/2005
TSO-C10b	ALTIMETER, PRESSURE ACTUATED, SENSITIVE TYPE	09/01/1959
TSO-C11e	POWERPLANT FIRE DETECTION INSTRUMENTS (THERMAL AND FLAME CONTACT TYPES)	10/17/1991
TSO-C13f	LIFE PRESERVERS	09/24/1992
TSO-C14b	AIRCRAFT FABRIC, INTERMEDIATE GRADE	02/15/1990
TSO-C15d	AIRCRAFT FABRIC, GRADE A	02/26/1990
TSO-C16A-1	Amendment-1, AIRSPEED TUBES (ELECTRICALLY HEATED)	04/16/1951
TSO-C16	Airspeed Tubes (Electrically Heated)	09/01/1948
TSO-C19b	PORTABLE WATER-SOLUTION TYPE FIRE EXTINGUISHERS	05/01/1958
TSO-C20A-1	Amendment-1, COMBUSTION HEATERS	04/16/1951
TSO-C20	COMBUSTION HEATERS	06/15/1949
TSO-C21b	AIRCRAFT TURNBUCKLE ASSEMBLIES AND/OR TURNBUCKLE SAFETYING DEVICES	03/16/1989
TSO-C22g	SAFETY BELTS	03/05/1993
TSO-C23d	PERSONNEL PARACHUTE ASSEMBLIES	06/01/1994
TSO-C25a	Aircraft Seats and Berths (Type I Transport, 6g Forward Load)	01/15/1957
TSO-C26c	AIRCRAFT WHEELS AND WHEEL-BRAKE ASSEMBLIES, WITH ADDENDUM I	05/18/1984
TSO-C26d	Aircraft Wheels, Brakes and Wheel/Brake Assemblies for Parts 23, 27 and 29 Aircraft	10/14/2004
TSO-C27A-2	Amendment-2, TWIN SEAPLANE FLOATS	06/30/1955
TSO-C27	TWIN SEAPLANE FLOATS	03/15/1952
TSO-C28	AIRCRAFT SKIS	03/15/1952
TSO-C30c	AIRCRAFT POSITION LIGHTS	05/12/1989
TSO-C31d	HIGH FREQUENCY (HF) RADIO COMMUNICATIONS TRANSMITTING EQUIPMENT OPERATING WITHIN THE RADIO	04/30/1984

TSO-C32d	HIGH FREQUENCY (HF) RADIO COMMUNICATIONS RECEIVING EQUIPMENT OPERATING WITHIN THE RADIO FREQUENCY	04/30/1984
TSO-C34e	ILS GLIDE SLOPE RECEIVING EQUIPMENT OPERATING WITHIN THE RADIO FREQUENCY RANGE OF 328.6-335.4	01/15/1988
TSO-C35d	AIRBORNE RADIO MARKER RECEIVING EQUIPMENT	05/05/1971
TSO-C36e	AIRBORNE ILS LOCALIZER RECEIVING EQUIPMENT OPERATING WITHIN THE RADIO FREQUENCY RANGE OF 108-112	01/25/1988
TSO-C37d	VHF RADIO COMMUNICATIONS TRANSMITTING EQUIPMENT OPERATING WITHIN THE RADIO FREQUENCY RANGE 117.975	09/23/1992
TSO-C37e	VHF RADIO COMMUNICATIONS TRANSMITTING EQUIPMENT OPERATING WITHIN THE RADIO FREQUENCY RANGE 117.975	04/14/2005
TSO-C38d	VHF RADIO COMMUNICATIONS RECEIVING EQUIPMENT OPERATING WITHIN THE RADIO FREQUENCY RANGE 117.975 TO	09/23/1992
TSO-C38e	VHF RADIO COMMUNICATIONS RECEIVING EQUIPMENT OPERATING WITHIN THE RADIO FREQUENCY RANGE 117.975 TO	04/14/2005
TSO-C39b	AIRCRAFT SEATS AND BERTHS	04/17/1987
TSO-C39c	9g Transport Airplane Seats Certified by Static Testing	02/13/2004
TSO-C40c	VOR Receiving Equipment Operating Within The Radio Frequency Range Of 108-117.95 Megahertz (MHz)	01/25/1988
TSO-C41d	AIRBORNE AUTOMATIC DIRECTION FINDING (ADF) EQUIPMENT	05/06/1985
TSO-C42	PROPELLER FEATHERING HOSE ASSEMBLIES	03/01/1957
TSO-C43c	TEMPERATURE INSTRUMENTS	05/30/1995
TSO-C44b	FUEL FLOWMETERS	05/10/1995
TSO-C45a	MANIFOLD PRESSURE INSTRUMENTS	02/28/1995
TSO-C46a	MAXIMUM ALLOWABLE AIRSPEED INDICATOR SYSTEMS	04/23/1968
TSO-C47	PRESSURE INSTRUMENTS - FUEL, OIL, AND HYDRAULIC	10/15/1997
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TSO-C49b	ELECTRIC TACHOMETER: MAGNETIC DRAG (INDICATOR AND GENERATOR)	05/30/1995
TSO-C50c	AUDIO SELECTOR PANELS AND AMPLIFIERS	01/31/1983
TSO-C52b	FLIGHT DIRECTOR EQUIPMENT	05/30/1995
TSO-C53a	FUEL AND ENGINE OIL SYSTEM HOSE ASSEMBLIES	02/16/1961
TSO-C54	STALL WARNING INSTRUMENTS	10/15/1961
TSO-C54c	Stall Warning System	04/21/2005
TSO-C55	FUEL AND OIL QUANTITY INSTRUMENTS (RECIPROCATING ENGINE AIRCRAFT)	04/01/1959
TSO-C56a	ENGINE-DRIVEN DIRECT CURRENT GENERATORS/STARTER-GENERATORS	04/12/1984
TSO-C57a	HEADSETS AND SPEAKERS	01/31/1983
TSO-C58a	AIRCRAFT MICROPHONES (EXCEPT CARBON)	01/31/1983
TSO-C59a	Airborne Selective Calling (SELCAL) Equipment	07/14/2005

TSO-C60b	AIRBORNE AREA NAVIGATION EQUIPMENT USING LORAN C INPUTS	05/11/1988
TSO-C62d	TIRES	09/07/1990
TSO-C63c	AIRBORNE WEATHER AND GROUND MAPPING PULSED RADARS	08/18/1983
TSO-C64a	OXYGEN MASK ASSEMBLY, CONTINUOUS FLOW, PASSENGER	08/25/1989
TSO-C65a	AIRBORNE DOPPLER RADAR GROUND SPEED AND/OR DRIFT ANGLE MEASURING EQUIPMENT (FOR AIR CARRIER	08/18/1983
TSO-C66c	DISTANCE MEASURING EQUIPMENT (DME) OPERATING WITHIN THE RADIO FREQUENCY RANGE OF 960-1215 MEGAHERTZ	01/18/1991
TSO-C67	AIRBORNE RADAR ALTIMETER EQUIPMENT (FOR AIR CARRIER AIRCRAFT)	11/15/1960
TSO-C68a	AIRBORNE AUTOMATIC DEAD RECKONING COMPUTER EQUIPMENT UTILIZING AIRCRAFT HEADING AND DOPPLER GROUND	08/18/1983
TSO-C69c	EMERGENCY EVACUATION SLIDES, RAMPS, RAMP/SLIDES, AND SLIDE/RAFTS	08/18/1999
TSO-C70a	LIFERAFTS (REVERSIBLE AND NONREVERSIBLE)	04/13/1984
TSO-C71	AIRBORNE STATIC ("DC TO DC") ELECTRICAL POWER CONVERTER (FOR AIR CARRIER AIRCRAFT)	06/15/1961
TSO-C72c	INDIVIDUAL FLOTATION DEVICES	09/07/1990
TSO-C73	STATIC ELECTRICAL POWER INVERTER	12/18/1963
TSO-C74c	AIRBORNE ATC TRANSPONDER EQUIPMENT	02/20/1973
TSO-C75	HYDRAULIC HOSE ASSEMBLIES	09/04/1963
TSO-C76	FUEL DRAIN VALVES	03/01/1963
TSO-C77b	GAS TURBINE AUXILIARY POWER UNITS	12/20/2000
TSO-C78	CREWMEMBER DEMAND OXYGEN MASKS	02/10/1967
TSO-C79	FIRE DETECTORS (RADIATION SENSING TYPE)	11/12/1963
TSO-C80	FLEXIBLE AND OIL CELL MATERIAL	05/26/1964
TSO-C85a	SURVIVOR LOCATOR LIGHTS	03/07/1996
TSO-C87	AIRBORNE LOW-RANGE RADIO ALTIMETER	02/01/1966
TSO-C88a	AUTOMATIC PRESSURE ALTITUDE REPORTING CODE GENERATING EQUIPMENT	08/18/1983
TSO-C89	OXYGEN REGULATORS, DEMAND	02/10/1967
TSO-C90c	CARGO PALLETS, NETS, AND CONTAINERS	04/03/1992
TSO-C91a	EMERGENCY LOCATOR TRANSMITTER (ELT) EQUIPMENT	04/29/1985
TSO-C92c	AIRBORNE GROUND PROXIMITY WARNING EQUIPMENT	03/19/1996
TSO-C93	AIRBORNE INTERIM STANDARD MICROWAVE LANDING SYSTEM CONVERTER EQUIPMENT	11/26/1976
TSO-C94a	OMEGA RECEIVING EQUIPMENT OPERATING WITHIN THE RADIO FREQUENCY RANGE OF 10.2 to 13.6 KILOHERTZ	08/12/1981
TSO-C95	MACH METERS	08/18/1983
TSO-C96a	ANTICOLLISION LIGHT SYSTEMS	04/07/1989
TSO-C97	LITHIUM SULFUR DIOXIDE BATTERIES	09/26/1979
TSO-C99	PROTECTIVE BREATHING EQUIPMENT	06/27/1983

TSO-C100b	Child Restraint System (CRS)	07/16/2002
TSO-C101	OVER SPEED WARNING INSTRUMENTS	02/19/1987
TSO-C102	AIRBORNE RADAR APPROACH AND BEACON SYSTEMS FOR HELICOPTERS	04/02/1984
TSO-C103	CONTINUOUS FLOW OXYGEN MASK ASSEMBLY (FOR NON-TRANSPORT CATEGORY AIRCRAFT)	04/12/1984
TSO-C104	MICROWAVE LANDING SYSTEM (MLS) AIRBORNE RECEIVING EQUIPMENT	06/22/1982
TSO-C105	OPTIONAL DISPLAY EQUIPMENT FOR WEATHER AND GROUND MAPPING RADAR INDICATORS	06/13/1984
TSO-C106	AIR DATA COMPUTER	01/15/1988
TSO-C109	Technical Standard Order	12/09/1985
TSO-C110a	AIRBORNE PASSIVE THUNDERSTORM DETECTION EQUIPMENT	10/26/1988
TSO-C112	AIR TRAFFIC CONTROL RADAR BEACON SYSTEM/MODE SELECT (ATCRBS/MODE S) AIRBORNE EQUIPMENT	02/05/1986
TSO-C113	AIRBORNE MULTIPURPOSE ELECTRONIC DISPLAYS	10/27/1986
TSO-C114	TORSO RESTRAINT SYSTEMS	03/27/1987
TSO-C115b	AIRBORNE AREA NAVIGATION EQUIPMENT USING MULTI-SENSOR INPUTS	09/30/1994
TSO-C116	CREWMEMBER PROTECTIVE BREATHING EQUIPMENT	03/01/1990
TSO-C117a	AIRBORNE WINDSHEAR WARNING AND ESCAPE GUIDANCE SYSTEMS FOR TRANSPORT AIRPLANES	08/01/1996
TSO-C118	TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS) AIRBORNE EQUIPMENT, TCAS I	08/05/1988
TSO-C119b	TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS) AIRBORNE EQUIPMENT, TCAS II	12/19/1998
TSO-C120	AIRBORNE AREA NAVIGATION EQUIPMENT USING OMEGA/VLF INPUTS	01/26/1988
TSO-C121	UNDERWATER LOCATING DEVICES (ACOUSTIC) (SELF-POWERED)	03/01/1990
TSO-C122	DEVICES THAT PREVENT BLOCKED CHANNELS USED IN TWO-WAY RADIO COMMUNICATIONS DUE TO SIMULTANEOUS	04/11/1994
TSO-C123a	COCKPIT VOICE RECORDER SYSTEMS	08/02/1996
TSO-C124a	FLIGHT DATA RECORDER SYSTEMS	08/01/1996
TSO-C126	406 MHz EMERGENCY LOCATOR TRANSMITTER (ELT)	12/23/1992
TSO-C127a	ROTORCRAFT, TRANSPORT AIRPLANE, AND NORMAL AND UTILITY AIRPLANE SEATING SYSTEMS	08/21/1998
TSO-C127	Rotorcraft, Transport Airplane, and Normal and Utility Airplane Seating Systems	03/30/1992
TSO-C128	DEVICES THAT PREVENT BLOCKED CHANNELS USED IN TWO-WAY RADIO COMMUNICATIONS DUE TO UNINTENTIONAL	07/20/1993
TSO-C129a	AIRBORNE SUPPLEMENTAL NAVIGATION EQUIPMENT USING THE GLOBAL POSITIONING SYSTEM (GPS)	02/20/1996
TSO-C132	Geosynchronous Orbit Aeronautical Mobile Satellite Services Aircraft Earth Station Equipment	03/25/2004

TSO-C135	Transport Airplane Wheels and Wheel and Brake Assemblies	05/02/2002
TSO-C137	AIRCRAFT PORTABLE MEGAPHONES	07/20/1998
TSO-C140	AEROSPACE FUEL, ENGINE OIL, AND HYDRAULIC FLUID HOSE ASSEMBLIES	07/17/2002
TSO-C141	AIRCRAFT FLUORESCENT LIGHTING BALLAST/FIXTURE EQUIPMENT	08/17/1999
TSO-C142	LITHIUM BATTERIES	04/04/2000
TSO-C144	AIRBORNE GLOBAL POSITIONING SYSTEM ANTENNA	03/12/1998
TSO-C145a	AIRBORNE NAVIGATION SENSORS USING THE GLOBAL POSITIONING SYSTEM (GPS) AUGMENTED BY THE WIDE AREA	09/19/2002
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TSO-C147	TRAFFIC ADVISORY SYSTEM (TAS) AIRBORNE EQUIPMENT	04/16/1998
TSO-C148	AIRCRAFT MECHANICAL FASTENERS	09/26/1997
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TSO-C151b	TERRAIN AWARENESS AND WARNING SYSTEM	12/17/2002
TSO-C153	INTEGRATED MODULAR AVIONICS HARDWARE ELEMENTS	05/06/2002
TSO-C154a	Universal Access Transceiver (UAT) Automatic Dependent Surveillance - Broadcast (ADS-B) Equipment	06/17/2005
TSO-C155	Recorder Independent Power Supply	02/03/2005
TSO-C157	Aircraft Flight Information Services-Broadcast (FIS-B) Data Link Systems and Equipment	09/20/2004
TSO-C158	Aeronautical Mobile High Frequency Data Link (HFDL) Equipment	08/19/2004
TSO-C159	Avionics Supporting Next Generation Satellite Systems (NGSS)	09/20/2004
TSO-C161	Ground Based Augmentation System Positioning and Navigation Equipment	05/30/2003
TSO-C162	Ground Based Augmentation System Very High Frequency Data Broadcast Equipment	05/30/2003
TSO-C163	VDL Mode 3 Communications Equipment Operating Within the Frequency Range 117.975-137.000 Megahertz	05/04/2004
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Appendix 12

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Appendix 13

National Fire Protection Association (NFPA) Manuals

I. Introduction. Inspectors are frequently asked questions regarding fire protection issues. Many contracts require compliance with standards listed in National Fire Protection Association (NFPA) manuals. Therefore, Inspectors need to be thoroughly familiar with the information contain in these manuals. Inspectors should as a minimum have the complete manuals available. The following are extracts of some pertinent information that can be found in NFPA manuals. Also, on the last page are diagrams explaining the symbols found on Hazardous Material labels.

II. NFPA 10, *Standard for Portable Fire Extinguishers*

Chapter 4 Inspection, Maintenance, and Recharging

4-1.2 The procedure for inspection and maintenance of fire extinguishers varies considerably. **Minimal knowledge is necessary to perform a monthly "quick check" or inspection in order to follow the inspection procedure as outlined in Section 4-3**. A trained person who has undergone the instructions necessary to reliably perform maintenance and has the manufacturer's service manual shall service the fire extinguishers **not more than 1 year apart**, as outlined in Section 4-4.

4-1.4* **Maintenance, servicing and recharging shall be performed by trained persons** having available the appropriate servicing manual(s), the proper types of tools, recharge materials, lubricants, and manufacturer's recommended replacement parts or parts specifically listed for use in the fir extinguisher.

4-2.1 **Inspection.** A **"quick check"** that a fire extinguisher is available and will operate. It is intended to give reasonable assurance that the fire extinguisher is fully charged and operable. This is done by verifying that it is in its designated place, that it has not been actuated or tampered with, and there is no obvious or physical damage or condition to prevent its operation.

4-2.2 **Maintenance.** A thorough examination of the fire extinguisher. It is intended to give maximum assurance that a fire extinguisher will operate effectively and safely. It includes a thorough examination and any necessary repair or replacement. It will normally reveal if hydrostatic testing or internal maintenance is required.

4-3 Inspection.

4-3.1* **Frequency.** Fire extinguishers shall be inspected when initially placed in service and thereafter at approximately **30-day intervals**. Fire extinguishers shall be inspected at more frequent intervals when circumstances dictate.

4-3.2* **Procedures**. Periodic inspection of fire extinguishers shall include a check of at least the following items:

(a) Location in designated place
(b) No obstruction to access or visibility
(c) Operating instructions on nameplate legible and facing outward.
(d)* Safety seals and tamper indicators not broken or missing.
(e) Fullness determined by weighing or "hefting"
(f) Examination for obvious physical damage, corrosion, leakage, or clogged nozzle
(g) Pressure gauge reading or indicator in the operable range or position
(h) Condition or tires, wheels, carriage, hose, and nozzle checked (for wheeled units)
(i) HMIS label in place

4-3.3 Corrective Action. When an inspection of any fire extinguisher reveals a deficiency in any of the conditions listed in 4-3.2 (a), (b), (h), and (i), immediate corrective action shall be taken.

4-3.3.1 Rechargeable Fire Extinguishers. When an inspection of any rechargeable fire extinguisher reveals a deficiency in any of the conditions listed in 4-3.2 (c), (d), (e), (f), and (g), it shall be subjected to applicable maintenance procedures.

4-3.4 Inspection Recordkeeping.

4-3.4.1 Personnel making inspections shall keep records of all fire extinguishers inspected, including those found to require corrective action.

4-3.4.2 At least monthly, the date the inspection was performed and the initials of the person performing the inspection shall be recorded.

4-3.4.3 Records shall be kept on a tag or label attached to the fire extinguisher, on an inspection checklist maintained on file, or in an electronic system (e.g., bar coding) that provides a permanent record.

4-4 Maintenance.

4-4.1 Frequency. Fire extinguishers shall be subjected to maintenance at intervals of **not more than 1 year**, at the time of hydrostatic testing, or when specifically indicated by an inspection.

4-4.3* Six-Year Maintenance. Every 6 years, stored-pressure fire extinguishers that require a 12-year **hydrostatic test** shall be emptied and subjected to the applicable maintenance procedures. The removal of agent from halon fire extinguishers shall only be done using a listed halon closed recovery system.

When the applicable maintenance procedures are performed during periodic recharging or hydrostatic testing, the 6-yeasr requirement shall begin from that date.

Exception: ***Nonrechargeable fire extinguishers shall not be hydrostatically tested*** *but shall be removed from service at a maximum interval of 12 years from the date of manufacture. Nonrechargeable halon agent fire extinguishers shall be disposed of in accordance with 4-3.3.3.*

4-4.4* **Maintenance Recordkeeping.** Each fire extinguisher shall have a tag or label securely attached that indicates the month and year the maintenance was performed and that identifies the person performing the service.

4-4.4.1* **Fire extinguishers that pass the applicable 6-year requirements** of 4-4.3 shall have the maintenance information recorded on a suitable metallic label or equally durable material having a minimum size of 2 in. X 3 ½ in. (5.1 cm X 8.9 cm).

The new label shall be affixed to the shell by a heatless process, and any old maintenance labels shall be removed. These labels shall be of the self-destructive type when removed from a fire extinguisher is attempted. The label shall include the following information.

(a) Month and year the maintenance was performed, indicated by a perforation such as is done by a hand punch
(b) Name or initials of person performing maintenance and name of agency performing the maintenance

Table 5-2 Hydrostatic Test Interval for Extinguishers

Extinguisher Type	Test Interval (Years)
Stored-pressure water, loaded stream, and/or Antifreeze	**5**
Wetting agent	**5**
AFFF (aqueous film-forming foam)	**5**
FFFP (film-forming fluoroprotein foam)	**5**
Dry chemical with stainless steel shells	**5**
Carbon dioxide	**5**
Wet chemical	**5**
Dry chemical, stored-pressure, with mild steel shells, Brazed brass shells, or aluminum shells	**12**
Dry chemical, cartridge- or cylinder-operated, with Mild steel shells	**12**
Halogenated agents	**12**
Dry powder, stored-pressure, cartridge- or cylinder-Operated, with mild steel shells	**12**

III. NFPA 30, *Flammable and Combustible Liquids Code*

Chapter 2 Tank Storage

2.3.1 Foundations of Tanks and Tank Appurtenances

2.3.1.1* Tanks shall rest on the ground or on foundations made of concrete, masonry, piling, or steel. **Tanks foundations shall be designed to minimize the possibility of uneven settling of the tank to minimize corrosion in any part of the tank resting on the foundation.**

2.3.1.2 Where tanks are supported above their foundations, tank supports shall be installed on firm foundations. Supports for tanks storing Class I, Class II, or Class IIIA liquids shall be of concrete, masonry, or protected steel.

Exception: Single wood timber supports *(not cribbing), laid horizontally, shall be permitted to be used for outside aboveground tanks if not more than 12 in. (.03m) high at their lowest point.*

2.3.2 Installation of Aboveground Tanks

2.3.2.3 Control of Spills from Aboveground Tanks. Every tank that contains a Class I, Class II, or Class IIIA liquid shall be provided with a means to prevent an accidental release of liquid from endangering important facilities and adjoining property or from reaching waterways. Such means shall meet the requirements of 2.3.2.3.1, 2.3.2.3.2, or **2.3.2.3.3**, whichever is applicable.

2.3.2.3.3 Secondary Containment Tanks. Where a secondary containment tank is used to provide spill control, the tank shall meet all of the following requirements:

(d) **Means shall be provided for determining the level of liquid in the tank.** This means shall be accessible to the delivery operator.

(g) The tank shall be **capable of resisting the damage from the impact** of a motor vehicle or suitable collision barriers shall be provided.

2.3.2.5.3 Openings for gauging on tanks storing Class I liquids shall be provided with a vapor tight cap or cover.

2.4 Testing Requirements for Tanks

2.4.3* **Additional Testing. Tanks that have been relocated,** structurally damaged, repaired, or are suspected of leaking shall be tested in a manner acceptable to the authority having jurisdiction.

2.5 Fire Prevention and Control

2.5.3.1 Precautions shall be taken to prevent the ignition of flammable vapors form sources such as the following:

(1) Open flames

(2) Lightning

(5) Smoking

(9) Static electricity

2.5.3.4* **Static Electricity.** All equipment such as tanks, machinery, and piping shall be designed and operated to prevent electrostatic ignitions. All metallic equipment where an ignitable mixture could be present shall be bonded or grounded. The bond or ground or both shall be physically applied or shall be inherently present by the nature of the installation. Any electrically isolated section of metallic piping or equipment shall be bonded or grounded to prevent hazardous accumulation of static electricity. All nonmetallic equipment and piping where an ignitable mixture could be present shall be given special consideration.

2.5.4 **Management of Fire Hazards**. The extent of fire prevention and control provided for tank storage facilities shall be determined by an engineering evaluation of the installation and operation, followed by the application of sound fire protection and process engineering principles. The evaluation shall include, but not be limited to, the following:

(1) Analysis of fire and explosion hazards of the facility
(2) Analysis of local conditions, such as exposure to and from adjacent properties, flood potential, or earthquake potential
(3) Fire department or mutual aid response

2.5.6.2 **Personnel responsible for the use and operation of fire protection equipment** shall be trained in the use of that equipment. Refresher training shall be conducted at least annually. The personnel responsible shall be able to demonstrate knowledge of the use and operation of the fire protection equipment.

2.5.6.5 **The emergency procedures shall be kept readily available** in an operating area and updated regularly.

2.5.6.6 Where premises are likely to be unattended for considerable periods of time, a summary of the emergency plan shall be posted or located in a strategic and accessible location.

2.5.7.1 All fire protection equipment shall be properly maintained and periodic inspections and test shall be done in accordance with both standard practice and equipment manufacturer's recommendations.

2.5.7.2 Maintenance and operating practices at tank storage facilities shall control leakage and prevent spillage of liquids.

2.6 Operations and Maintenance of Tanks

2.6.2.2 Unsupervised, isolated aboveground storage tanks shall be secured and marked in such a manner as to identify the fire hazards of the tank and the tank's contents to the general public. The area in which he tank is located shall be protected from tampering or trespassing, where necessary.

IV. NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases*

Chapter 5 Release Detection of Tanks and Piping

5-3 Release Detection Methods

5-3.2.2 Inventory Reconciliation Analysis. If inventory records have been analyzed by quantitative statistical methods, the analysis should be examined for indications of a probable release, assuming that the data can be analyzed conclusively.

5-3.2.3 Manual Tank Gauging. For tanks 3785-L (1000 gal) capacity or less, manual tank gauging can be used, if the liquid level measurements are taken at the beginning and end of a period that is at least 36 hours long and during which no liquid is added or removed from the tank *(see Appendix E)*

5-3.2.4 Tanks Equipped with Secondary Containment. If the tank is of double wall construction or is installed with a secondary containment system, the monitoring point should be checked for the indication of a release.

5-3.3 Aboveground Storage Tanks

5-3.3.1 Visual Inspection. An external visual inspection of the tank system should be performed.

5-3.3.2 Tanks Equipped with Secondary Containment. If the tank is of double wall construction or is installed with a secondary containment system, the monitoring point should be checked for the indication of a release. The leak detection ports, if present, should be checked.

5-4 Testing

5-4.3.5 Internal Inspection. If warranted, an internal inspection of the tank should be conducted to evaluate the condition of the tank interior.

V. NFPA 407, *Standard for Aircraft Fuel Servicing*

Chapter 4 Design

4.1.2 Electrostatic Hazards and Bonding

4.1.2.1 **A provision for bonding** shall be incorporated in the design of fuel serving vehicles or carts and systems to prevent differences in electrostatic potential in accordance with Section 5.4.

4.1.2.4 **API BULL 1529, *Aviation Fueling Hose,* Type C hose** (semiconductive) shall be used to prevent electrostatic discharges but shall not be used to accomplish required bonding. **API BULL 1529, Type A** hose that does not have a semiconductive cover shall not be used. **Type F** hose (hard wall) and **Type CT** hose (cold temperature) shall be permitted because they have semiconductive covers.

4.1.3 **No Smoking Signs.** Entrances to fueling areas shall be posted with "**no** smoking" signs.

4.3.6.6 Gasoline powered engines on fuel servicing vehicles shall be provided with **flame and spark arresting exhaust systems.**

4.3.7.1 **Battery Compartments.** Batteries that are not in engine compartments shall be securely mounted in compartments to prevent accidental arcing. The compartment shall be separate from fueling equipment. Suitable shielding shall be provided to drain possible fuel spillage or leakage away from the compartment. The compartment shall be provided with a vent at the top of the compartment.

4.3.8 **Cabinets.** All cabinets housing vehicle auxiliary equipment shall have expanded **metal flooring**, **perforated metal type flooring, or open floor** to facilitate air circulation within the enclosed space to prevent the accumulation of fuel.

4.3.9.1 Each aircraft fuel servicing tank vehicle shall have **two** listed fire extinguishers, each having a rating of at least **20 B:C** with one extinguisher mounted on each side of the vehicle.

4.3.9.4 Extinguishers shall be kept clear of elements such ice and snow. **Extinguishers located in enclosed compartments shall be readily accessible, and their location shall be marked clearly in letters at least 2 inches high.**

4.3.10.2 Full trailers and semi-trailers shall be equipped with brakes on all wheels.

4.3.11.1 A **"no smoking"** sign shall be posted prominently in the cab of every aircraft fuel servicing vehicle.

4.3.11.2 Smoking equipment such as **cigarette lighters and ash trays** shall not be provided. If a vehicle includes such equipment when initially procured, **it shall be removed or rendered inoperable.**

4.3.18 Product Identification Signs. Each aircraft fuel servicing vehicle or cart shall have a sign on **each side and the rear** to identify the product. The sign shall have letters at least 3 inches high and shall be of a color contrasting sharply with the sign background for visibility. The word **FLAMMABLE** and the name of the product carried, such as **Jet A**, or **AVGAS** shall appear on the sign.

4.4.4.1 Fuel storage tanks shall conform to the applicable requirements of **NFPA 30, *Flammable and Combustible Liquids Code.***

4.5.10 Fire Protection. Fire Protection shall conform to the requirements of **NFPA 418*, Standards for Heliports.***

Chapter 5 Operations

5.2.2 Following fueling of an aircraft all hose shall be removed including those from hydrant systems. **All hose shall also be properly stowed.**

5.4.1 Prior to making any fueling connection to the aircraft, the fueling equipment shall be bonded to the aircraft by use of a cable, thus providing a conductive path to equalize the potential between the fueling equipment and aircraft. **The bond shall be maintained until fueling connections have been removed**, thus allowing separated charges that could be generated during the fueling operation to reunite. **Grounding during aircraft fueling shall not be permitted**.

5.4.2 In addition to the above, where fueling overwing, **the nozzle shall be bonded with a nozzle bond cable having a clip or plug to a metallic component of the aircraft that is metallically connected to the tank filler port**. The bond connection shall be made before the filler cap is removed. If there is no plug receptacle or means for attaching a clip, the operator shall touch the filler cap with the nozzle spout before removing the cap in order to equalize the potential between the nozzle and the filler port. The spout shall be kept in contact with the filler neck until the fueling is completed.

5.4.5 Bonding and fueling connections shall be **disconnected in the reverse order** of connection.

5.4.6 Conductive hose shall be used to prevent electrostatic discharge but **shall not be used to accomplish required bonding.**

5.6.1 **Equipment,** other than that performing aircraft servicing functions**, shall not be permitted within 15 m (50 ft) of the aircraft during fuel servicing operations.**

5.6.2 **Equipment performing aircraft servicing functions shall not be positioned within 3-m (10 ft) radius of aircraft fuel system vent openings.**

5.7.1 **Battery chargers** shall not be connected, operated, or disconnected while fuel servicing is performed on the aircraft

5.7.2 **Aircraft ground-power generators** or other electrical ground-power supplies shall not be connected or disconnected while fuel servicing is performed on the aircraft.

5.7.3 **Electric tools** or similar tools likely to produce sparks or arcs shall not be used while fuel servicing is performed on the aircraft.

5.7.6 **Communication Equipment used during aircraft fuel servicing operations within 3 m (10 ft) of the fueling equipment** or the fill or vent points of aircraft fuel systems shall be intrinsically safe in accordance with UL 913, *Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II and III Division 1, Hazardous (Classified) Locations.*

5.8.5 **Personnel shall not carry lighters or matches** on their person while engaged in fuel servicing operations.

5.8.6 **Lighters and matches** shall not be permitted on or in fueling equipment.

5.9.1 Fuel Servicing operations shall be **suspended where there are lightning flashes** in the immediate vicinity.

5.12.1 Aircraft fuel servicing vehicles and carts shall be positioned so that a **clear path of egress** from the aircraft for the fuel servicing vehicles shall be maintained.

5.12.3 **Parking brakes shall be set** on all fuel servicing vehicles or carts before operators begin the fueling operations.

5.13.1 During fueling operations, **fire extinguishers shall be available on aircraft servicing ramps** or aprons.

5.13.2 Each aircraft fuel servicing tank vehicle shall have **two listed fire extinguishers, each having a rating of at least 20-B:C**, with one extinguisher mounted on each side of the vehicle.

5.13.5 Extinguishers shall be kept clear of elements such as ice and snow. **Extinguishers located in enclosed compartments shall be readily accessible, and their location shall be marked clearly in letters at least 50 nm (2 in) high.**

5.13.6 **Fuel servicing personnel shall be trained** in the use of the available fire extinguishing equipment they could be expected to use.

5.16.1 **Aircraft fueling hose shall be inspected before use each day.** The hose shall be extended as it normally would be for fueling and checked for evidence of blistering, carcass saturation or separation, cuts, nicks, or abrasions that expose reinforcement material, and for slippage, misalignment, or leaks at coupling. If coupling slippage or leaks are found, the cause of the problem shall be determined. Defective hose shall be removed from service.

5.16.2 **At least once a month the hose shall be completely extended and inspected as required in 5.16.1.** The hose couplings and the hose shall be examined for a length approximately 305 mm (12 in.) adjacent to the couplings. Structural weakness shall be checked by pressing the hose in this area around its entire circumference for soft spots. Hoses that show evidence of soft spots shall be removed from service. The nozzle screens shall be examined for rubber particles. The presence of such particles indicates possible deterioration of the interior, and the hose shall be removed from service. With the hose still completely extended, it shall be checked at the working pressure of the fueling equipment to which it is attached. Any abnormal twisting or ballooning during this test indicates a weakening of the hose carcass, and the hose shall be removed from service.

5.16.3 **A hose assembly that has been subjected to abuse**, such as severe end-pull, flattening or crushing by a vehicle, or sharp bending or kinking, shall be removed from service. It shall be hydrostatically tested prior to use.

5.17.1 Aircraft fuel servicing vehicles or carts shall not be operated unless they are in proper repair and **free of accumulations of grease, oil, or other combustibles.**

5.18 **Parking Aircraft Fuel Servicing Tank Vehicles.** Parking areas for unattended aircraft fuel servicing tank vehicles shall be arranged to provide the following:

(1) Dispersal of the vehicles in the event of an emergency
(2) A minimum of 3 m (10 ft) of clear space between parked vehicles for accessibility for fire control purposes
(3) Prevention of any leakage from draining to an adjacent building or storm drain that is not suitably designed to handle fuel
(4) A minimum of 15 m (50 ft) from any parked aircraft and buildings other than maintenance facilities and garages for fuel servicing tank vehicles

5.21 Rapid Refueling of Helicopters

5.21.1 Only turbine engine helicopters fueled with JET A or JET A-1 fuels shall be permitted to be fueled while an onboard engine is operating. Helicopters permitted to be fueled while an onboard engine is operating shall have all sources of ignition of potential fuel spills located above the fuel inlet port(s) and above the vents or tank openings. Ignition sources shall include, but shall not be limited to, engines, exhausts, auxiliary power units (APUs), and combustion-type cabin heater exhausts.

5.21.2 Helicopter fueling while onboard engines are operating shall be permitted only under the following conditions:

(1) An **FAA-licensed helicopter pilot** shall be at the aircraft controls during the entire fuel servicing process.

(4) **Only designated personnel, properly trained in rapid refueling operations,** shall operate the equipment. Written procedures shall include the safe handling of the fuel and equipment.

(5) **All doors, windows, and access points** allowing entry to the interior of the helicopter that are adjacent to, or in the immediate vicinity of, the fuel inlet ports **shall be closed** and shall remain closed during fueling operations.

(6) Fuel shall be dispensed into an open port from approved deadman-type nozzles, with a flow rate not to exceed 227 L/min (60 gpm), or it shall be dispensed through close-coupled pressure fueling ports. Where fuel is dispensed from fixed piping systems, the hose cabinet shall not extend into the rotor space. A curb or other approved barrier shall be provided to restrict the fuel servicing vehicle from coming closer than within 3 m (10 ft) of any helicopter rotating components. **If curb or approved barrier cannot be provided, fuel servicing vehicles shall be kept 6 m (20 ft) away from any helicopter rotating components, and a trained person shall direct fuel service vehicle approach and departure.**

VI. NFPA 418, *Standards for Heliports*

Chapter 2 General Requirements – Land-Based Facilities

2.2 Tank Locations.

2.2.1 **Storage, handling** and use of flammable and combustible liquids shall be in accordance with NFPA 30, *Flammable and Combustible Liquids.*

2.2.3 **Aboveground flammable liquid storage tanks**, compressed gas storage tanks, and liquefied gas storage tanks shall be laterally located at least 50 ft (15.2 m) from the edge of the final approach and takeoff (FATO) area as defined in FAA A/C 150/5390-2A, *Heliport Design Advisory Circular.*

2.5 **No Smoking**. No smoking shall be permitted within 50 ft (15.2 m) of the landing pad edge. No smoking signs shall be erected at access/egress points to the heliport.

2.6 **Fueling System.** Fueling systems shall be designed in accordance with NFPA 407,*Standard for Aircraft Fuel Servicing.*

Chapter 7 Portable Fire Extinguishers

7.1 **Quantity and Rating.** At least one portable fire extinguisher as specified in Table 7.1 shall be provided for each takeoff and landing area, parking area, and storage area.

Exception: This requirement shall not apply to unattended ground level heliports.

Table 7.1 Minimum Ratings for Portable Fire Extinguishers for Heliport Categories

Category	Helicopter Overall Length[1]	Minimum Rating
H-1	**Up to but not including 50 ft (15.2 m)**	**4-A:80-B**
H-2	**From 50 ft (15.2m) up to but not including 80 ft (24.4 m)**	**10-A:120-B**
H-3	**From 80 ft (24.4 m) up to but not including 120 ft (36.6 m)**	**30-A:240-B**

[1]Helicopter length, including the tail boom and the rotors

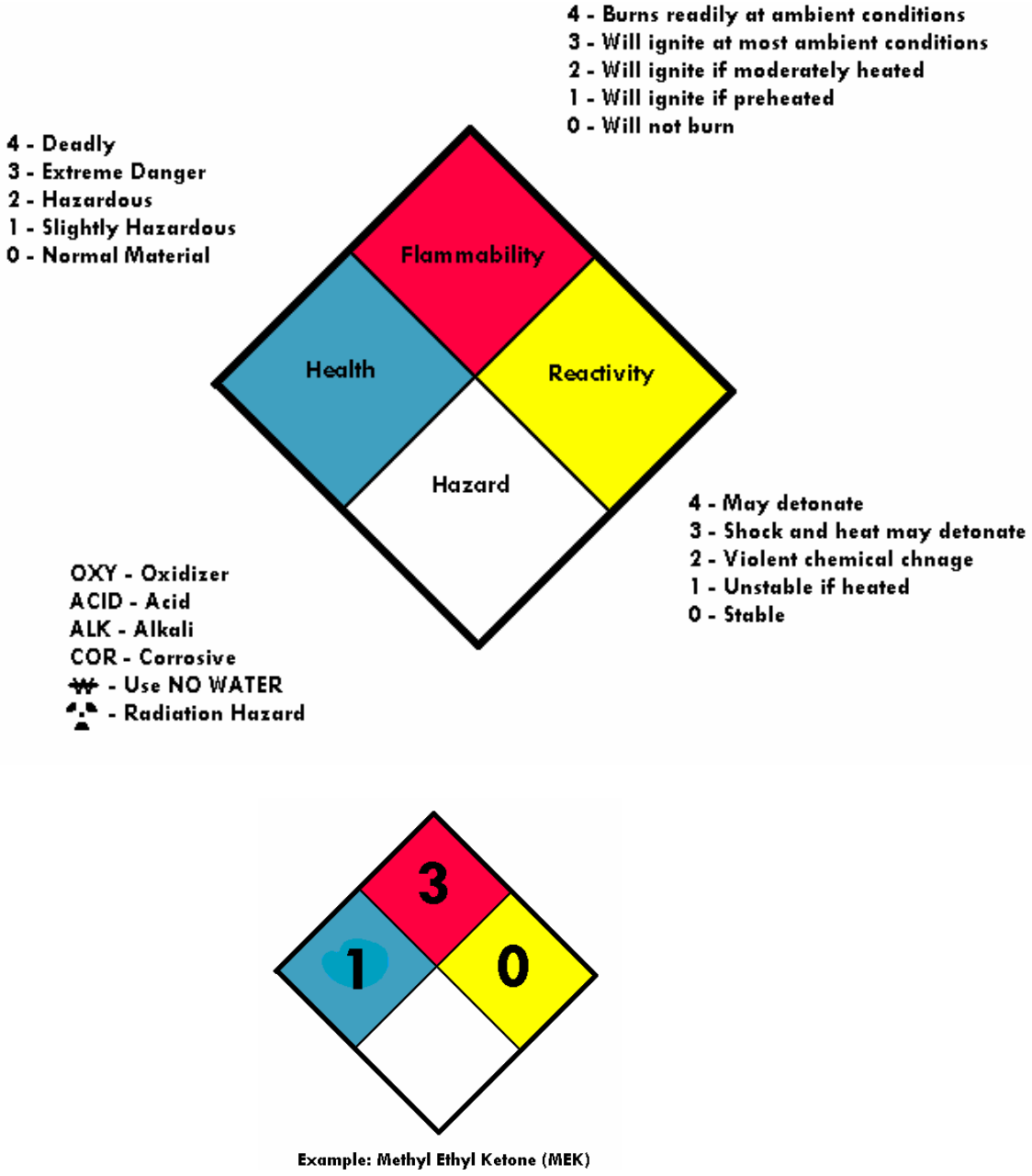
7.2 **Servicing.** Portable fire extinguishers shall comply with NFPA 10, *Standard for Portable Fire Extinguishers,* Chapters 1, 4, 5, and 6.

REMOTE FUEL SITES

ACO40901SP Fuel Filters Rated @ 15gpm, filter adequately @ 10% to 100% of their rated flow. **Hand Pumps** pump at an average of 8 to 10 gpm.

Questions regarding filters can be directed to Rick McKenna @ Velcon (719) 531-5855.

Supervisors and employees are responsible for ensuring that hazardous material containers and products used in the workplace are properly labeled. Labels should include the chemical identity, appropriate hazard warnings, and name and address of the manufacturer. Employees who purchase, introduce, or transfer hazardous materials to secondary containers will ensure labeling requirements are met before the product is permitted to be used in the workplace.



Example: Methyl Ethyl Ketone (MEK)