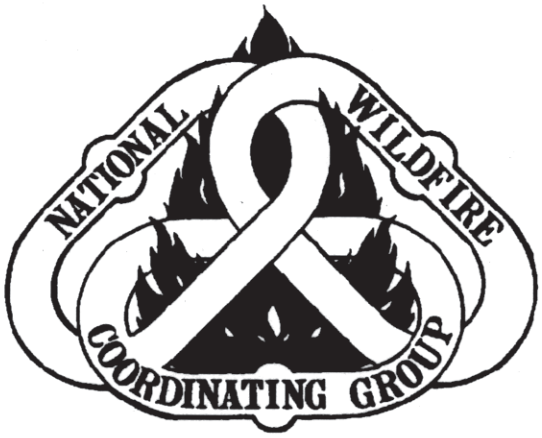
Helicopter Management
S-372

NFES 1503

Student Workbook
MARCH 2009



CERTIFICATION STATEMENT

on behalf of the

NATIONAL WILDFIRE COORDINATING GROUP

The following training material attains the standards prescribed for courses developed under the interagency curriculum established and coordinated by the National Wildfire Coordinating Group. The instruction is certified for interagency use and is known as:

Helicopter Management, S-372
Certified at Level I

This product is part of an established NWCG curriculum. It meets the COURSE DEVELOPMENT AND FORMAT STANDARDS – Sixth Edition, 2003 and has received a technical review and a professional edit.

Member NWCG and Training Working Team Liaison

Date 3-19-09

Chairperson, Training Working Team

Date 3/13/09

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National Interagency Fire Center, Fire Training, 3833 S. Development Ave., Boise, Idaho 83705.
E-mail: nwcg_standards@nifc.blm.gov.

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PREFACE

Helicopter Management, S-372 is a suggested training course in the National Wildfire Coordinating Group (NWCG) wildland and prescribed fire curriculum. It was developed by an interagency group of experts with guidance from NWCG Training under authority of the NWCG. The primary participants in this development effort were:

U.S. FISH AND WILDLIFE SERVICE
Dianne MacLean – Kenai National Wildlife Refuge

U.S.D.A. FOREST SERVICE
Jeff Quick – Prescott National Forest

AVIATION MANAGEMENT DIRECTORATE
Susie Bates – IAT Coordinator

NATIONAL INTERAGENCY FIRE CENTER, FIRE TRAINING
Rob Navarro, Graphic Artist – NIFC Instructional Media Unit
Ed Secakuku, Project Leader – NWCG Development Unit

The NWCG appreciates the efforts of these personnel and all those who have contributed to the development of this training product.

CONTENTS

Helicopter Management, S-372

Unit 0 – Introduction

OBJECTIVES:

During this unit the instructor will:

1. Introduce instructors and students.
2. Review course logistics.
3. Present course overview.
4. Discuss course expectations.
5. Review pre-course work.

I. WELCOME AND INTRODUCTIONS

Please present:

- Name and job title
- Agency, home unit
- Brief background
  - Incident qualification
  - Aviation experience

II. COURSE LOGISTICS

III. COURSE OVERVIEW

A. Course Objectives

At the successful completion of this course, students will be able to perform the tasks of a Helicopter Manager (HMGB) trainee.

Through simulations and exercises, students will obtain skills to competently and safely manage a helicopter to support incident and project helicopter operations.

B. Reference Materials

- Interagency Helicopter Operations Guide (IHOG)

  The IHOG is the primary job guide for interagency helicopter operations and the primary reference for this course.

- National, Regional and Local Area Supplements, Manuals, and Policies

C. Student Assessment

Students must obtain 70% or higher on the final exam to receive a certificate of completion for the course.

D. Unit and Course Evaluation Forms

- Students will complete a unit evaluation form following each unit.
- Students will complete a final course evaluation form at the end of the course.

IV. COURSE EXPECTATIONS

What are your expectations for this course?

Some expectations may be difficult to achieve because:

- Helicopter managers, and this class, have a tremendous amount of paperwork.
- This is not a class in the tactical use of helicopters.

The lists will be reviewed throughout the course to ensure expectations are being met.

REVIEW PRE-COURSE WORK:

Focus on how the modules relate to the helicopter manager position.

A-109: Aviation Radio Use

1. As a helicopter manager, what was most informative to you?

2. What is the frequency range for VHF-FM?

3. Air-to-air and air-to-ground can be done on what frequency?

4. What provides control for selection and operation of all installed radio transceivers?

5. True or False: If a frequency is being used, you can select another at random.

A-111: Pay Documents

1. What are the FS-6500-122 and the AMD-23 forms used for?

2. Why is it important to complete a Contract Daily Diary?

3. What are some examples of a significant event?

4. In the event you don't have a diary form, what can you use?

5. Is the daily diary a legal document?

6. Should you sign your name on these documents? Why?

A-115: Automated Flight Following

1. What is the purpose of the automated flight following (AFF)?

2. To install an AFF system into an aircraft, you need an AFF kit. What is an AFF kit?

3. Once the AFF is installed on an aircraft, what computer program is used to track the aircraft?

4. When tracking an aircraft on WebTracker, what does a red icon mean?

5. What does all of this mean to you as a helicopter manager?

A-116: General Awareness Security Training

1. Do you need to be concerned about aircraft security while at a helibase on a fire assignment?

2. What are you watching out for around aircraft?

3. What is the "Airport Watch Program"?

4. Who should you report suspicious activity to?

5. Other than your name and location, what information should you relay when reporting a suspicious individual?

6. What are some ways to secure your helicopter?

A-200: Annual Mishap Review Year

1. How many reported mishaps were there for the year assigned?

2. Why is the information in this module important to you as a helicopter manager?

3. Is there any common denominator with these mishaps? If so, what?

A-207: Aircraft Flight Scheduling

1. What is the importance of filing a flight plan?

2. Should a flight plan be followed at all times?

3. True or False: It is not necessary to fill out a flight schedule if you're going to be flight followed by AFF.

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Unit 1 – Aviation Policy

OBJECTIVES:

Upon completion of this unit, students will be able to:

1. Identify the helicopter manager's responsibility for obtaining and understanding information regarding aviation policy and procedures.

2. Recognize the basic structure of the aviation policies of the Department of the Interior and USDA Forest Service.

3. Identify the relationship of agency policies to the Federal Aviation Regulations.

4. Demonstrate ability to navigate the IHOG and develop a working knowledge of chapter content.

I. AVIATION POLICIES

A. Why policy?

Policy exists to maintain the highest level of safety for agency employees who work in and around aircraft.

Ignorance of, or noncompliance with policy, regulations, and procedures is perhaps the greatest underlying factor in natural resource agency aircraft accidents.

B. Why so much?

- To provide safe, cost-effective aviation service in support of agency goals and objectives.
- To coordinate aviation services with those of other agencies and cooperators to meet mutual program goals and objectives.
- To establish and maintain operating standards, practices, and procedures to prevent aircraft accidents from occurring.

C. Policy Implementation

Agencies provide "tools" to enable the aviation user to comply with policy and procedures.

For example, the "5-Step Card" is a tool; it lists the steps to follow to be in compliance with the basic procedures for aviation use.

1. Who is responsible to ensure all policies are being followed when you are the helicopter manager?

   It is your responsibility to:

   - Obtain accurate information regarding policy and procedures.

   - Understand the applicable policy and procedures concerning the bureau/agency helicopter you are managing.

2. Where can you find the most current policy?

   - Policy is on the internet.

   - Your local aviation manager.

II. MANUALS, HANDBOOKS, AND GUIDES

A. Manuals

Manuals set general policy statements and responsibilities regarding the agency's aviation management program.

B. Handbooks

- Handbooks contain material too specific for inclusion in the agency's manual.

  – Handbooks must be referenced in the manual
  – Handbooks are policy
  – "How to" directions
  – Training requirements
  – Performance and equipment specifications

- A manual or handbook supplement adapts or interprets higher level or external directive for national, regional, or local application.

  – Forest Service (FS): Supplements are color-coded.

  – Department of Interior (DOI): Agencies within DOI will supplement the Departmental Manual (DM) with their own aviation manuals or handbooks.

C. Guides

Guides provide guidance and do not necessarily have to be followed. However, bureaus or agencies may incorporate the guide into their manual system as a requirement.

D. Other Documents Specific to DOI

1. Operational Procedures Memoranda

   Temporary or interim directives issued to permit the timely dissemination of instructional and procedural material.

2. Information Bulletins

   General interest and non-directive, bear no expiration date, and may be discarded at the discretion of the recipient.

3. Operation Guides

   Non-mandatory, but preferred procedures for a specific aspect of aviation operations.

E. Other Documents Specific to FS

- Interim Directives

  An internal directive which modifies previous direction or establishes new direction for a period of up to 18 months.

F. Other Documents Common to All Agencies

- Safety Alerts:
  - Are red-bordered; published on an unscheduled basis.
  - Contain information regarding aviation safety.
  - Address operations, maintenance, or publications.

G. Directive Language

Language used to issue direction in agency materials gives clues to your required response; it also helps you understand how binding the directions are.

1. "Must" and "shall" convey mandatory compliance.
2. "Ought" and "should" convey required compliance, except for justifiable reasons.
3. "May" and "can" convey optional compliance.

H. Directives Hierarchy

When going lower in the structure (national level to the regional/area/state to the local level), directives become <u>more restrictive, never more lenient</u>.

III. POLICY STRUCTURES

A. Federal Aviation Regulations (FARs)

14 CFR, Federal Aviation Regulations are rules set by the Federal Aviation Administration (FAA) for all pilots to follow in the flight environment.

1. DOI and FS are technically exempt from all 14 CFR regulations except:

   - Registration (Part 47)
   - General Operating and Flight Rules (Part 91, sub B)

2. FARs has been incorporated into the main agency manual/handbook system.

   - All of the FARs regulations and guidelines required to be known are already a part of your agency manual.
   - By incorporating the FARs into aircraft procurement documents, agencies can also mention additional specific requirements, such as:
     - Personal protective equipment (PPE)
     - Pilot experience minimums.
     - All other requirements deemed necessary for safe missions.

B. Pertinent CFR Sections for the Helicopter Manager

1. Part 91 – General Operating and Flight Rules

- 91.119 Minimum Safe Altitude – General
- 91.137 Temporary Flight Restrictions in Vicinity of Disaster/Hazard Area
- 91.141 Temporary Flight Restrictions for Presidential Events
- 91.145 Flight Operations Near Major Sports Events
- 91.155 Basic Visual Flight Rules Weather Minimums
- 91.107 Use of Safety Belts
- 91.131 Restricted Category Aircraft

2. Part 133 – Rotorcraft External Load Operations

- 133.31 Emergency Operations
- 133.33 Operating Rules
- 133.35 Carriage of Persons
- 133.45 Operating Limitations

Rules regarding qualifications, training, limitations etc., for external loads.

3. Part 135 – Commuter and On-Demand Operations

Operating requirements: Commuter and on-demand operations and rules governing persons on board such aircraft.

4. Part 137 – Agricultural Aircraft Operations

   - 137.1 Applicability (b) Public Emergency
   - 137.3 Definition of Terms
   - Subpart C 137.29 General (e) exemption for helicopters working on forest fires
   - 137.43 Operations in Controlled Airspace
   - 137.45 Non-Observance of Airport Traffic Pattern
   - 137.49 Operations Over Other Than Congested Area
   - 137.51 Operations Over Congested Area – General

     Operating an aircraft for the purpose of dispensing any economic poison, plant nourishment, pest control, and plant life.

5. These FARs must be complied with regardless of whether we operate under public aircraft.

C. Acronyms

The following acronyms are used for basic flight information and air traffic controller procedures:

- Notice to Airmen (NOTAM)
- Advisory Circulars (AC)
- Temporary Flight Restrictions (TFR)
- Instrument Flight Rules (IFR)
- Visual Flight Rules (VFR)

D. Agency Level Policy Structures

Although policy structures seem overwhelming, we have explored the information needed to follow these structures.

Think of the structures as a handy reference tool for finding the policy you need.

E. Forest Service Policy Structures

1. Forest Service Manual (FSM) 5700 objectives:

- To manage aviation functions and activities to achieve safe, cost-effective aviation services in support of the Forest Service mission, goals, and objectives.

- Coordination of aviation activities and operations with other agencies and cooperators to meet mutually agreed-upon standardized goals and objectives and achieve program efficiencies.

2. Directive hierarchy

Remember: With policy, as you move down the structure, directives become more specific, never broader.

For example:

The FSM 5700 contains broad Forest Service policy, while a handbook such as the Forest Service Handbook 5709.14 "Smokejumper Paracargo," contains detailed information of specific procedures.

3. Supplements

Regions and Forests in the Forest Service often supplement national policy in the FSM 5700 Manual and Handbook with more specific regional and local policy.

Remember, regional or local levels cannot make policy or procedures less restrictive.

F. DOI Policy Structures

National Business Center – Aviation Management Directorate (NBC-AMD) has the responsibility of overseeing aviation management in DOI.

1. DOI Manual DM 350-354 objectives:

- Establishes management responsibilities, policies, and procedures for the use and operation of aircraft.
- Applicable to all DOI bureaus and offices that use or operate aircraft.

2. Directive hierarchy

Remember: With policy, as you move down the structure, directives become more specific, never broader.

3. Supplements

DOI bureaus and offices have aviation manuals that either supplement DM 350-354 or address bureau-specific procedures.

Bureaus or offices cannot make policy or procedures less restrictive than DM 350-354.

Each bureau or office may have its own manual with its own supplements at the state and district levels, such as the Bureau of Land Management (BLM).

Unlike other agencies, BLM state offices and districts cannot implement policy or procedures that are more restrictive than the National BLM 9400 Manual without prior approval from the Director of Fire and Aviation.

G. Guides as Policy

Agencies and bureaus address any extra guides in their aviation policy documents.

1. Interagency guides

Has your agency or bureau incorporated a particular guide as policy? If so, should it simply be used as a guide?

Be aware of your unit's local aviation plan or manual supplement (always check to ensure references are current).

Use local expertise (aviation manager, dispatcher). If local expertise does not have an answer, move up the chain until you receive an answer.

2. Policy "red flags"

Watch for the following red flags when discussing policy or procedures with other aviation users—especially while preparing for a mission or in the field.

- Someone tells you "*I think this is what the policy is*."
- Someone tells you "*This is what the policy is*" but does not have the reference in writing.
- You think it would be "*easier*" to bypass the rules and just "*get the job done.*"

Remember: Ignorance of, or noncompliance with policy, regulations, and procedures is perhaps the greatest underlying factor in natural resources agency aircraft accidents.

IV. INTERAGENCY HELICOPTER OPERATION GUIDE

The IHOG was originally developed as a way for various agencies to work together in an interagency environment.

- Some agencies have adopted it as policy for all helicopter operations.
- Other agencies use it as a guide only.

IHOG Exercise: Groups will review their assigned chapters of the IHOG. Each group will also select two appendixes they think are important to helicopter managers. On a flip chart, list five important topics of your assigned chapters and the appendixes your group selected and why. Be prepared to present your lists to the class.

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Unit 2 – Dispatch and Ordering

OBJECTIVES:

Upon completion of this unit, students will be able to:

1. Identify requirements for manager's kit and pre-dispatch preparedness.

2. Given a resource order/aircraft request form, demonstrate knowledge of information required for the dispatch.

3. Demonstrate knowledge of the process of "marrying up" modules with aircraft.

4. Identify procedures for aircraft tracking and flight following. Describe the limitations of automated flight following.

I. PRE-DISPATCH RESPONSIBILITIES

Prior to an assignment, you need to be mentally and physically prepared. Make sure you have the following:

- PPE (see IHOG, chapter 9)
- A current Incident Qualifications Card (red card)
- Position task book(s)
- A complete helicopter manager kit

  Helicopter managers are responsible for assembling and maintaining their kit.

Helicopter Manager Kit Exercise: On a flip chart, groups will list the items they would put in their helicopter manager kit. Be prepared to present your list to the class.

A. Dispatch Ordering Flow Chart

Initial attack dispatch places an aircraft resource order locally (they check with cooperators first).

- If the order is unfilled, it goes to the Geographical Area Coordination Center (GACC).
- If the order is still unfilled, it goes to the National Interagency Coordination Center (NICC) in Boise, Idaho.
- NICC has the ultimate authority regarding use of aircraft resources.
- This cycle returns to the local initial attack dispatch.

When a helicopter is ordered for any fire assignment, the minimum number of personnel that must be assigned to each helicopter is:

Category	Standard Category	Restricted Category
Type 1	Manager plus 4	Manager only
Type 2	Manager plus 3	Manager only
Type 3	Manager plus 2	Manager only

In Alaska, the minimum is a manager for all categories (although modules are often assigned).

When a fire helicopter is ordered, a manager and module must be ordered at the same time through the dispatch system.

A manager must be identified before a Call When Needed (CWN) helicopter can be assigned.

How are aircraft and modules listed and tracked through the dispatch system?

B. Acceptance of Assignment

Before leaving your home unit, obtain a copy of the dispatch information or flight order form (Resource Order).

1. The resource order will have all pertinent information:

- Incident Name
- Incident Number
- Contact Information
- Contact Phone Numbers
- Flight Following Information
- Frequencies
- Charge Codes

2. Specialized equipment that is essential for the job should be included on your resource order.

   - Laptop
   - Cell phone, SAT phone
   - GPS unit

   If the items are not included on your resource order and become lost, damaged, or stolen, the incident will not replace them.

3. The local unit's dispatch office may be able to provide you with additional information such as:

   - Briefing packets
   - Maps
   - Situation updates
   - Additional frequencies and contacts

II. MODULE PREPARATION

The helicopter manager may or may not know the other module members or where they are from.

If possible, make contact prior to dispatch. Verify items like PPE, radio and radio equipment compatibility, and any details to "marrying up."

"Marrying up" of the helicopter and module should occur at a pre-designated location away from the incident. This is where the module manager completes the pre-use inspection and documentation.

III. PRE-USE BRIEFING

When you arrive at the designated location to marry up with the helicopter and module:

- Gather all helicopter module and aircraft crew information (names, qualifications, resource order numbers, etc.).

- Discuss standard operating procedures, what your expectations are, and how you expect the module to perform.

- Review the helicopter agreement/contract.

  – Most helicopter agreements/contracts contain standard language, but some may vary between geographical locations.

  – Know what the contract says to do your pre-use inspections and administer the agreement/contract accordingly.

  – Review what flight payment document is required.

IV. AIRCRAFT RESOURCE ORDERING

All National CWN contract Type 1 and Type 2 helicopters are ordered through NICC, whether they are needed for fire or resource work.

Alaska, however, has Type 1 and Type 2 helicopters available locally ("on-call" contract).

A. Helicopter Sources: Type 1 and Type 2

NICC is the hiring office for all Type 1 and Type 2 helicopters under the National CWN contract.

- The status of CWN and Exclusive Use contract Type 1 and Type 2 helicopters is maintained in the NICC helicopter database "WildNICC" (a specialized WildCAD program).

- It is essential that NICC update the database immediately upon receiving status change information.

- GACCs must receive approval from NICC prior to reassigning Type 1 or Type 2 CWN contract helicopters internally.

- GACCs or local dispatch centers are the source for Type 1 and Type 2 Exclusive Use helicopters (while on contract).

B. Helicopter Sources: Type 3

1. Type 3 helicopters are available through regional contracts or from aircraft rental agreements (ARA). ARAs can be ordered from the AMD source list: www.nbc.gov/amd.

2. Type 3 helicopters are dispatched locally or through GACCs.

   - Orders to NICC for Type 3 are placed with GACCs.

   - In rare instances, NICC may hire Type 3 helicopters from the AMD source list. If so, NICC will consult with the involved GACC(s) of this intention.

V. FLIGHT TRACKING

Flight tracking is a very important function while ferrying from point to point.

A. What purpose does flight tracking serve?

- Safety
- Resource utilization
- Accurate flight planning
- Cost savings

B. NICC will flight track for:

- All aircraft crossing GACC boundaries that have been ordered by or through NICC.
- CWN helicopters during mobilization.
- CWN helicopters during demobilization (only if government personnel are onboard).
- Exclusive, National, and Type 3 helicopters crossing GACC boundaries.

C. Procedures for Flight Tracking

- Flight plan is received from GACC (Exclusive or National).
- Flight plan from contractor/vendors/pilots (CWN).
- NICC faxes copy of flight plan to the receiving GACC.
- NICC relays flight information via telephone to receiving units prior to departure, each stop, and upon arrival at their final destination.
- When managers ferry from one location to another outside of their region/area, they need to:
  - Notify NICC with their flight plan, and
  - Contact the NICC aircraft desk at every fuel or overnight stop along the way (1-800-994-6312).
- Each GACC has their own boundaries for the area they serve. Notify the represented GACC when entering their area.
- Flight following requirements must be adhered to (according to agency policy) during all point-to-point flights, once on scene, and during all missions.

D. Automated Flight Following (AFF)

AFF is one type of agency flight following that provides dispatch offices much greater detail and accuracy on aircraft location and flight history.

- AFF can be used to assist flight tracking of most national resources (air tankers, lead planes, helicopters, smokejumper aircraft, etc.)

- AFF has its limitations; it does not take the place of a dispatcher or other flight follower.

E. Pros and Cons of AFF

1. Communications

- Pros – Reduces the need for a 15 minute verbal check-in, leaving more clear air for other essential communications.

- Cons – Complacency; can negatively reduce communication in general.

Communicate prior to mission and attain mutual understanding of local flight following procedures (15 minutes still preferred, or is 30 minutes acceptable?).

Ensure good radio communications in the area you are working. Have a good idea of areas with limited or no contact due to terrain features, mission elevation, etc., and relay to dispatch.

Pre-identify mission dip sites or landing zones. If possible, communicate on short final to these sites with whoever performs the flight following.

Thus, if you turn “RED” on the screen, they will not go into “Rescue Mode.”

2. Resources tracking

   - Pros – Relatively "real time" tracking (average 2-minute delay) allows for quicker response to more defined area in case of Search and Rescue of downed aircraft.

   - Cons – More equipment to purchase, install, and maintain. Also requires a subscription. If the switch is flipped, "Big Brother" knows where you are.

   - Test AFF unit regularly; make sure all components are connected.

3. Technology (computers, satellites)

   - Pros – Excellent piece of equipment; when operating correctly it makes work easier.

   - Cons – Requires electricity; does not work after a power outage.

4. Remember:

   - Not all units use AFF.

   - Not all aircraft have AFF installed.

   - Don't rely on AFF alone.

   AFF installed on the aircraft does not preclude responsibilities for a flight plan!

RESOURCE ORDER
OVERHEAD

INITIAL DATE/TIME	2. INCIDENT/PROJECT NAME	3. INCIDENT/PROJECT ORDER NUMBER	4. OFFICE REFERENCE NUMBER
9/23 1000	POLEBRIDGE	MT-FNF-014635	P2ABC3 BLM ABC3

5. DESCRIPTIVE LOCATION/RESPONSE AREA	6. SEC.	TWN	RNG	Base MDM	8. INCIDENT BASE/PHONE NUMBER	9. JURISDICTION/AGENCY
3 Miles Southwest of Polebridge, MT (Jetport = FCA)	7. MAP REFERENCE				406-326-8649	USFS
						10. ORDERING OFFICE FDC

11. AIRCRAFT INFORMATION	LAT. 48°43' 04"	LONG. 114° 19' 08"

BEARING	DISTANCE	BASE OR OMNI	AIR CONTACT	FREQUENCY	Ground Contact	FREQUENCY	RELOAD BASE	OTHER AIRCRAFT HAZARDS

12. Request Number	Ordered Date/ Time	From / To	Q T Y	RESOURCE REQUESTED	Needed Date/Time	Deliver To	To / From	Time	Agency ID	RESOURCE ASSIGNED	ETD / ETA	RELEASED Date	RELEASED To	Time ETA
O-39	9/23 1000	ME DISP	1 EA	DIVS	9/23 1600	FCA	Bob Disp	1030	MT- MCD	Ed Jacobs	☐ ☐		BIL	☐ ☐
O-40	9/23 1000	ME DISP	1 EA	DIVS	9/23 1600	FCA	Bob Disp	1030	MT- CRA	Tara Brown	☐ ☐		LWT	☐ ☐
O-41	9/23 1000	ME DISP	1 EA	SOF2	9/23 1600	FCA	Bob Disp	1030	MT- MCD	Rob Madsen	☐ ☐		BIL	☐ ☐
O-42	9/23 1000	ME DISP	1 EA	FOBS	9/23 1600	FCA	Bob Disp	1030	MT- MCD	Sara Clarke	☐ ☐		BIL	☐ ☐
O-67	9/23 1000	ME DISP	1 EA	FBAN	9/23 1600	FCA	Bob Disp	1030	MT- HNF	Mike Knudson	☐ ☐		HLN	☐ ☐
											☐ ☐			☐ ☐
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											☐ ☐			☐ ☐

13. Req. No.	ORDER RELAYED Date	Time	To/From	ACTION TAKEN
O-39 thru O-42, 67	9/23	1000	DISP /ME	With Requests
O-39 thru O-42, 67	9/23	1010	Bob /Disp	Placed Requests
O-39 thru O-42, 67	9/23	1030	Disp /Bob	With Fill; travel to follow

Req. No.	ORDER RELAYED Date	Time	To/From	ACTION TAKEN

Report ID: R031 Ver: 2.1-1.62

RESOURCE ORDER	Initial Date/Time	2. Incident / Project Name	3. Incident / Project Order Number	Financial Codes
AIRCRAFT	04/18/05 1142	Rippin' Fire	CO-GJD-000001	
			4. Office Reference Number	

5. Descriptive Location	6. TWN	RNG	SEC	Base MDM	8. Incident Base/ Phone Number	
Rippin' Fire	1N	2W	10	Ute, CO	CO-GJC (Dispatch) 970-257-4800, CO-GJC (Dispatch) Expanded Crews - 970-244-3123, CO-GJC (Dispatch) Expanded Equipment - 970-244-31	
	LAT. 39 10 10N					9. Jurisdiction / Agency Western Slope C
	LONG. 108 41 35W					10. Ordering Office Grand Junction Air Ce

11. Aircraft Information

Bearing	Distance	VOR	Contact Name	Frequency Type	Assigned Frequency	Reload Base	Other Aircraft/Hazards (within 1 mile)
237	3	RHU		Air to Air	126.475	GJT	Powerline-39 10 10 N / 108 41 35 W
19	8	JNC		Air to Ground	171.550		
231	50	RIL					

12. Request Number	Ordered Date/Time	From	To	Qty	Resource Requested	Needed Date/Time	Deliver To	From Unit	To Unit	Assigned Date/Time	Resource Assigned Unit ID	Resource Assigned	M/D Ind	Estimated Time of Departure	Estimated Time of Arrival	Released Date	Released To
A-1	04/18/05 1143 MST	CO-GJC (Dispatch) 970-257-4800	CO-GJC	1	Helicopter, Type 3 Standard	04/18/05 1142 MST	Rippin' Fire	CO-GJC	CO-GJC	04/18/05 1203 MST	CO-GJD	Geo-Seis Helicopters, Inc. HELICOPTER-6 TA (N316TA) (CO-GJC)	M	04/18/05 1200 MST	04/18/05 1200 MST		
Travel Mode		Special Needs			Reporting Instructions												
A-1.1	04/18/05 1159 MST	CO-GJC (Dispatch) 970-257-	CO-GJC	1	HELICOPTER MANAGER, CALL WHEN NEEDED	04/18/05 1142 MST	Rippin' Fire	CO-GJC	CO-GJC	04/18/05 1159 MST	CO-GJD	Johnson, Chad (CO-GJC)	M	04/18/05 1200 MST	04/18/05 1200 MST		
Travel Mode FLY		Special Needs			Reporting Instructions												
A-1.2	04/18/05 1159 MST	CO-GJC (Dispatch) 970-257-	CO-GJC	1	HELICOPTER CREW MEMBER	04/18/05 1142 MST	Rippin' Fire	CO-GJC	CO-GJC	04/18/05 1159 MST	CO-GJD	Blair, Cody (CO-GJC)	M	04/18/05 1200 MST	04/18/05 1200 MST		
Travel Mode FLY		Special Needs			Reporting Instructions												
A-1.3	04/18/05 1159 MST	CO-GJC (Dispatch) 970-257-	CO-GJC	1	HELICOPTER CREW MEMBER	04/18/05 1142 MST	Rippin' Fire	CO-GJC	CO-GJC	04/18/05 1159 MST	CO-WRF	Boyum, Malia (CO-GJC)	M	04/18/05 1200 MST	04/18/05 1200 MST		
Travel Mode FLY		Special Needs			Reporting Instructions												

13. User Documentation

Req. No.	Documentation	Entered By

Helicopter Management, S-372

Unit 3 – Contract Administration and Pay Documents

OBJECTIVES:

Upon completion of this unit, students will be able to:

1. Demonstrate knowledge of requirements to administer helicopter contracts and procurement agreements.

2. Identify the different types of contracts and when to use each.

3. Identify the differences between AMD-23 and Aviation Business System program to determine how and when to use each.

4. Successfully complete an AMD-23 and use the Aviation Business System.

5. Explain the aircraft rental agreement contract.

6. Explain the on-call contract.

7. Identify user responsibilities, problem areas, and where to find the answers.

I. HELICOPTER MANAGER RESPONSIBILITIES

Helicopter managers wear many hats and all are equally important.

- Safety of personnel and helicopter operations
- Knowledge of regulations and policies
- Thorough understanding of aviation contracts
- Planning, with flexibility to deal with change
- Technical expertise with equipment and procedures of a particular mission
- Module leadership
- Knowledge of aircraft operation and maintenance requirements
- Problem solving
- Accountability and documentation
- Paperwork

  Helicopter managers deal with a tremendous amount of paperwork.

  From day-to-day pay document entries, to documenting the events surrounding an incident, paperwork is an important responsibility of the helicopter manager.

  Helicopter managers must keep thorough, accurate, and orderly records of the government's business with the assigned aircraft.

II. AVIATION CONTRACTS

Competent use of the contract has a huge impact on the effectiveness of helicopter operations.

A. Types of Contracts

Helicopter managers may be assigned to a variety of different contracts:

- National Call-When-Needed
- Regional Type 3 Call-When-Needed
- Exclusive Use
- Aircraft Rental Agreement
- On-Call
- Occasionally others

Each type of contract is similar to the other; however, specific provisions may be different.

Spend significant time reading each contract. The contents are organized into similar, but not always identical, sections.

Familiarity with this structure will help you find the information needed to operate and document pay for services—no matter which contract you have.

Who is the one person that can make changes to the contract?

B. "It Depends on the Contract"

This phrase will become very familiar to the helicopter manager.

Contract questions do not have a set of answers. **The only answer is to read the contract; phone the COR or CO if you have questions.**

C. Helicopter Manager's Authority

The helicopter manager's delegated authority is specified in the contract, or in a letter that accompanies the contract/rental agreement being used.

Some helicopter managers are the COR for their contract; most are not. Review your agency requirements for COR qualification.

III. CONTRACT COMPONENTS

A. Section A - Solicitation/Contract/Order for Commercial Items

The first few pages provide the name of the contracting officer, effectiveness dates of the contract, amendments, and table of contents.

There may be other forms, checklists, or examples in this section, depending on the contract.

B. Section B - Terms, Supplies or Services, and Prices

This section describes the basic terms of the contract, such as rates for flight, additional personnel, requirements of aircraft performance, or additional equipment offered.

National contracts do not have a section B; those items are found in parts of sections A and C.

C. Section C - Description/Specifications/Work Statement

This section describes in detail the equipment involved, the authorities of the people involved, and the specifics of the work to be performed.

Rates of payment are found in section B, if there is one. How those rates apply, what will be paid for and what won't, is found in section C.

Section C is the largest section in the contract. It provides the "guts of the contract" such as:

- Everything from pilot duty limitations to maintenance on how the vendor is paid.
- Specific guidelines for all aspects of the contracted work to be performed.

Many items vary from contract to contract, but some items are consistent—particularly those that are derived from federal regulation or policy.

IV. INTERAGENCY CWN HELICOPTERS CONTRACT

A. Table of Contents

- Letter to CWN Helicopter Contractors
- Flight Use Report Distribution/Instructions
- Aircraft Use Report, AMD-23 Instructions
- Flight Use Report, FS-6500-122 Instructions
- Flight Following Procedures
- Inspection and Approval Information
- Helicopter and Service Truck Pre-Use Checklist
- Hourly Flight Rates
- Additional Contract Rates and Contract Information
- Minimum Performance Requirements
- Type I Limited Helicopter Information Chart

- Type I Standard Helicopter Information Chart
- Type II Standard Helicopter Information Chart
- Type II Limited Helicopter Information Chart
- Current Modifications

B. Section C - Description/Specifications/Work Statement

C-1 Scope of Contract

C-2 Certifications

C-3 Government Furnished Property

C-4 Aircraft Requirements

C-5 Aircraft Maintenance

C-6 Aircraft and Equipment Security

C-7 Avionics Requirements

C-8 Contractor Furnished Avionics Systems

C-9 Avionics Installation and Maintenance Standards

C-10 Operations

C-11 Contractor's Environmental Responsibilities

C-12 Personnel

C-13 Conduct and Replacement of Personnel

C-14 Suspension and Revocation of Personnel

C-15 Substitution of Personnel, Aircraft, and Equipment

C-16 Relief Costs

C-17 Flight Hour and Duty Limitations

- Pilot flight time and duty limitations are consistent between DOI/USFS contracts.
  - The federal government follows the FARs by policy.
  - The vendor pilot must follow the FARs by law.
- The FARs:
  - Limits pilot flight time to a total of 8 hours in a day.
  - Limits the pilot to a total of 14 hours in a duty day, including all pre- and post-flight duties.

  These limitations are also found in the contract, along with additional policy that states the government may impose more restrictive flight and duty limitations during periods of high stress/fatigue.
- DOI/USFS policy

  Though not derived from FARs, contracts require pilots to have two full days off-duty during any 14-consecutive day period. It is our policy, but more important, it is in the contract.
- Form HCM 14 (IHOG, Appendix A)
  - Tracks cumulative pilot flight time and duty day.
  - The previous five days of flight time are totaled each day.
  - The sixth day is dropped from total.

- "36 in 6"

  Tracking flight and duty limitations is an ongoing task for helicopter managers.

  – If a pilot flies a total of 36 hours in 6 consecutive days, the next day must be a day off.

  – No more than 42 hours can be flown in a 6-day period.

  – Each day off the pilot takes begins a new 6-day period.

  – Remember: 2 full days off-duty during any 14-consecutive day period.

- Mechanic

  – The mechanic has a 16-hour duty day limitation and also needs 2 days off in 14.

  – The flight and duty limitations are one of the consistent features of DOI/USFS helicopter contracts.

- Some of the other items are variable.

  Provisions to pay for availability, extended standby, mobilization costs, and overnight costs are examples of items that are quite different from contract to contract.

  These variable items can cause confusion or disagreements between the company rep (usually the pilot) and the government rep (you).

C-18 Accident Prevention and Safety

C-19 Mishaps

C-20 Personal Protective Equipment

C-21 Inspection and Acceptance

C-22 Pre-Use Inspection Expenses

C-23 Re-Inspection Expenses

C-24 Inspections During Use

C-25 Contract Period and Renewal Options

C-26 Authorized Ordering Activities

C-27 Ordering Procedures

C-28 Point-of-Hire

C-29 Assigned Work Locations

C-30 Ordered Availability Periods

C-31 Daily Availability Requirements

- The contract states when availability begins.
  - Some contracts are based on arrival time at the incident; however, some contracts (in Alaska for example) start availability from the time the aircraft leaves its base.
- The contract states how to:
  - Figure pay for availability, such as by the hour or by the quarter-hour.
  - Deduct for periods of time the aircraft is "unavailable" due to maintenance problems (or a lack of vendor provided fuel), if that is required. Availability depends on the contract.

- An aircraft rental agreement has no daily availability charges; "standby" is paid for the aircraft.
  - Standby is generally calculated as clock hours minus flight hours.
  - Standby equal to flight time may be free; check the rental agreement.

C-32 Unavailability

- Don't base application of an item such as unavailability on a previously assigned contract. The current contract may be different.

C-33 Payment for Flight

C-34 Payment for Availability

C-35 Payment for Extended Standby

- We pay for the aircraft to be ready to deploy within a specified amount of time.
  - The contract states how many hours are included in this basic standby period.
  - The contract may provide for additional pay for hours beyond that time.
- If authorized, this timeframe is called "extended standby."
  - Pay is based on the number of authorized vendor crewmembers involved and paid to the company.
  - Whatever pay the pilot, mechanic, and fuel vehicle driver receive is between them and their company. Some contracts do not pay extended standby.

C-36 Payment for Project Work

C-37 Reimbursement for Mobilization and Demobilization Costs

C-38 Ordering/Payment for Additional Personnel

C-39 Transporting of Relief Crew

C-40 Ordering Additional Equipment

C-41 Additional Aircraft

C-42 Meals

C-43 Payment for Fuel Servicing Vehicle Mileage

C-44 Payment for Fuel Transportation

C-45 Payment for Foam Concentrate

C-46 Miscellaneous Cost to the Contractor

C-47 Payment Procedures

C-48 Government Helicopter Manager Delegation and Authorities

C-49 Definitions

C-50 Abbreviations

C. Call the COR or CO

If serious questions arise over the interpretation of language in the contract or if a change in provisions is proposed, call the COR or CO.

You may hear opinions from other helibase personnel, however, **the COs interpretation is the one that counts—legally!**

The issue does not have to become a source of conflict. You can call and ask for help together or separately, but make the call.

D. Guarantee

Rental agreements may have different amounts of "guarantee" hours that are applied if the aircraft is retained beyond 24 hours.

E. Overnight Expenses

The contract specifies if per diem and lodging expenses are allowed, or whether it is included in the daily availability rate of the aircraft.

The contract states whether receipts must be submitted for lodging, or the rate of reimbursement in lieu of a receipt.

F. Other Clauses

Many other clauses describe items that vary from contract to contract:

- Mobilization costs, if allowed.
- Equipment provided by both vendor and government.
- Fire vs. project work
- Relief crew or additional personnel

These are just a few. To correctly apply these contractual provisions, read the contract thoroughly.

G. Section C – Exhibits

Exhibits may include pre-use checklists, charts, and examples of various forms. This is where the fuel consumption in gallons per hour, model, and weight reduction (or "download") for each model is found.

H. Section D

Contains references to federal acquisition regulations that are incorporated into the contract by reference in this section.

I. Section E

Discusses how the solicitation for contracted services is handled and how performance is evaluated.

J. Supplements

Aircraft rental agreements have special equipment and related items listed in supplements.

Animal capture is an example of information located in a supplement to the ARA.

K. Daily Diary

A daily diary should be updated each day for fire and project work.

1. Copies

The helibase manager will want a copy of all paperwork, including the daily diary, load calculations, manifests, and cost summaries.

Keep copies for your reference (and on file) in case it is required in the future.

2. Problems

Personal expectations can create discomfort with a contractor who is new to you. Patience on both sides can be helpful.

Being prepared to address details of the mission (fueling needs, radio frequencies, maps, overnight provisions) often clues a pilot in to your level of situational awareness.

Don’t let your safe operation slip into an unworkable or unsafe attitude if it becomes apparent that personnel issues are not going to improve.

The technical assistance directory can provide help from aviation managers who know what you are dealing with.

If personnel issues cannot be resolved, or a contractor performance suffers, the situation should be discussed with the CO.

Document in the daily diary any evaluations required by the contract. Read the contract; call the CO or COR if you have questions.

V. AIRCRAFT RENTAL AGREEMENT (ARA)

A. 353 DM 2 - Aircraft Rental System

All commercial aviation services…shall be acquired through the procurement process of DOIs AMD. An ARA is an agreement between the government and the vendor that includes:

- Section A - Prices
- Section B - Aircraft Specifications
  - Description of services
- Section C - Terms and Conditions
  - Inspection/acceptance of vendors
  - Ordering service
  - Payment information

The ARA is not a binding agreement; it is a contract until an order is placed with the vendor and they accept it.

The language in both procurement documents is the same; any differences need to be noted.

B. Responsibilities

1. Only the contracting officer may:

   - Award
   - Negotiate (page 21, C 4.1.3)
   - Obligate
   - Determine disputes clause
   - Remedies
   - Terminate

2. Vendor responsibilities:

   - Contact CO if offering more favorable terms such as, pricing, guarantee, standby, etc.
   - Obtain all required licenses and permits.
   - Comply with all applicable laws and regulations.
   - Vendor's representative (pilot unless otherwise notified).

3. User responsibilities:

   - Ask for aircraft and pilot approval documents.
   - Complete the AMD-23.
     - Hired and release times are very important.
     - Less than or greater than 24-hour hire.
   - Know if you can sign for services.
     - Only an employee who represents the agency paying for the service can sign off on the AMD-23.

4. Ordering official's responsibilities:

   - You must have your bureau's authorization to order aircraft.
   - You must fill out the Best Value Determination (BVD) record. It is very important to obtain the certification of funds signature.

C. How to Order from the ARA Source List

1. Go to http://amd.nbc.gov/

2. On the left side of the AMD home page under Links/Resources:

   - Click "Aircraft and Pilot Sources"
   - Read the information under "ATTENTION" then click "Accept"
   - Read the information under "Who may place and how to place orders against the ARA"
   - Click "ARA Best Value Determination" and read the instructions on page 2.
   - Print out the BVD.

3. Proceed to "Aircraft Source List" (this will be reviewed later)

D. Compare at Least Three Vendors

1. Put vendor information into the work table to do your price analysis.

   - Determine your vendor choice.
   - Fill in estimated price and fund certification portion of the record.
   - Call vendor and offer job.
   - Record vendor, aircraft tail number, and basis for decision.

2. If price is $2,500 or less:

   - Complete BVD record.
   - Get certification of funds signature.
   - Keep this in your aircraft order file (to document that funds were available before you placed the order).

3. If project exceeds $2,500 but less than $25,000:

   - Fill out the BVD form per the instructions.
   - Call vendor and offer the project.
   - Document your decision to hire and keep the vendor for three years.
   - Be prepared to have your BVD record audited by the CO of your Flight Coordination Center (FCC).

4. Project is estimated to exceed $25,000:

   $25,000 is the limit per order under the ARA.

   Exceptions:

   - Emergency orders – Unusual and compelling circumstances where the government will be unduly harmed if procurement is delayed.
   - A planned resource mission – Submit an AMD-13, Request for Contract Services, to your FCC.

5. Emergency hire exceeding $25,000:

   For emergency hires expected to exceed $25,000 or an aircraft already hired that reaches $25,000 due to the emergency:

   - Fill out the emergency hire (red) section of the BVD form.
   - Fax the form to your FCC that day or as soon as possible for review and approval.
   - The vendor will not be paid unless this form accompanies the AMD-23's for payment.

6. Compare prices; selection may be made on:

   - Lowest priced, technically acceptable for the requirement, or
   - Best value using a tradeoff analysis process.

     Best value means the expected outcome of an acquisition that, in the government's estimation, provides the greatest overall benefit in response to the requirement.

7. Best value/tradeoffs

   - Price comparison
   - Capability of aircraft
   - Past performance
   - Work experience
   - Document your decision on BVD form

VI. ARA SOURCE LIST

If you do not have access to the internet, call your local FCC to request a hard copy.

A. National Business Center Web site: http://amd.nbc.gov/

- Aircraft rental system
- Who may place an order? (**a must read**)
- Aircraft source list

B. Rental Agreement

- Rate per flight hours
- Fuel cost
- Guarantee hours
- Additional amount per flight
- Extended standby (over 9 hours)
- Subsistence allowance

C. Guarantee Hours

- Animal Capture, Eradication, and Tagging of Animals (ACETA) on ARA?
- Short haul?
- Rappel?
- Single Engine Air Tankers (SEAT)?

D. Problems

- Can we go over $25,000?
- Justification and approval
- Prescribed burn?
- Projects?

E. Problem Areas

- Guarantee
- Unavailability
- Users negotiating in the field
- Differences in rates source list/vendor
- For pilots concerned about their wages, direct them to the Department of Labor.

F. Billee Codes

Must have a current service level agreement with aviation management along with an interagency agreement.

G. Numeric Identifiers Established for Each User

- Allows DOI aviation management to bill
- Provide backup detail
- Run reports against

H. Unauthorized Commitments

- Aircraft not on source list
- Aircraft and/or pilot not carded
- No rental agreement in place

I. Ratification

- Potential personal liability:
  - Cost of flight.
  - Requires extensive explanation and documentation.
  - Administrative costs: $1,000

J. Prompt Payment Act

1. Unless otherwise set by contract, the standard payment period is 30 days.

   - This means payment is made on the 30th day.

   - If paid beyond 30 days, the government must pay interest.

2. What if vendor offers discount?

   Payment date for discount begins on date of pilot signature or last date of flight (whichever is later).

   If date for discount payment falls on a weekend or holiday, the discount date will be the business day prior to weekend or holiday.

   Go to https://www.iat.gov/ for training on how to complete the Aircraft Use Report, AMD-23 or the USFS Flight Use Report, 6500-122.

Contracting Exercise: For this exercise, you may use the contracts and the ARA to answer the questions.

VII. PAY DOCUMENTS

There are two documents used to document and process aircraft services for payment:

- AMD-23: A paper-based document used primarily by DOI Agencies.
- Aviation Business System (ABS): An electronic document currently used by the USFS.

A. Availability/Unavailability

Often confusing, it is helpful to remember that availability is for the day—one whole day. If the aircraft is available all day, record 1.00.

Anything less than a whole day will be recorded as a decimal fraction of a day of availability, and the rest as a fraction of a day of unavailability.

These two amounts, added together, should equal a total of 1.00.

B. Availability/Non-Availability

To display on the pay document:

- Availability is recorded on both the AMD-23 and in ABS as "AV."
- The AMD-23 records unavailability as "UA."
- ABS records non-availability as "NA."

C. Availability/Unavailability (AMD-23) or Non-Availability (ABS)

Many contracts state that the amount of availability, rounded to the nearest 15 minutes, will be reduced by 1/56th for each quarter-hour that service is unavailable.

Why 1/56th? Because if the contract is based on a 14-hour day, each one of those 14 hours has four quarter-hour blocks of time.

- 4 quarter-hours multiplied by 14 hours, equals 56.
- 56 individual quarter-hour blocks of time to account for.
- Use a conversion chart.

D. Availability/Unavailability Recorded on AMD-23 as AV/UA

For this type of contract, 3 hours 15 minutes of unavailability would translate into 13/56ths, and recorded as:

Elapsed Time or Quantity	Pay Item Code
0.77	AV
0.23	UA

E. Availability/Unavailability (AMD-23) or Non-Availability (ABS)

Be aware that contracts differ; some are based on a 14-hour day, some on a 10-hour day.

Availability might be reduced by 1/10th for each hour, or by 1/14th for each hour, instead of 1/56th.

F. Availability/Unavailability Recorded on AMD-23 as AV/UA

Three hours of unavailability, for a contract based on a 14-hour day, to the nearest hour, would be recorded as:

Elapsed Time or Quantity	Pay Item Code
.79	AV
.21	UA

G. Availability/Unavailability (AMD-23) or Non-Availability (ABS)

The AMD-23 and the ABS will show the amount of time for availability/unavailability. Only in ABS will you actually show the dollar amounts of availability/non-availability.

H. ARA Standby (no availability with an ARA)

Scenario: Your aircraft comes on at 0800 a.m. You fly two hours and release the aircraft at 1500. With the ARA you are using, standby is free equal to flight time.

How much flight time and standby will you have?

You have the aircraft for 7 hours, minus 2 hours of flight time, equals 5 hours standby. Standby is free equal to flight time, so you pay for 3 hours standby.

Breaks in service not authorized by the contract would also be deducted from standby time, as would any unavailability.

I. ARA Guarantee

Generally applies if aircraft is rented for more than 24-hour period.

CLASS REVIEW: This is a review of the basics for AMD-23.

- How is an elapsed time of 1.4 hours written?

- What is the pay item code for ferry time?

- What is a billee code and where do you find it?

- What is the use code for longline with remote hook?

- Do you put anything in the red box below the "elapsed time or quantity" column?

- Is the helicopter manager the one to sign?

- You move two pax out to a landing zone (LZ). Later you move them back. How many pax are recorded in the payload column for that trip?

- You move two pax out for a recon, no landing. How many pax are recorded in the payload column for that trip?

Contract and Pay Scenario 1 Exercise: This exercise is on pages 3.41 – 3.43 in your Student Workbook. Be sure to keep all the information from this exercise as it will be used for an exercise in Unit 9.

VIII. AVIATION BUSINESS SYSTEM (ABS)

A. What is ABS?

ABS is a Web-based application used by the Forest Service to electronically document and process all contract aviation costs currently documented on FS-6500-122 Flight Use Invoice.

1. ABS is an automated submission of pay documents that provides:

   - Paperless electronic system
   - Data entry program for electronic tracking and payment
   - Provides more accurate and prompt payment
   - Up-to-date report system
   - Management tool

   Budget and Financial Management, Fire and Aviation Management, and Acquisition Management worked jointly on this automated process to streamline the use, tracking, and payment for all aviation resources.

2. Advantages

   - One-time data entry
   - Daily accruals
   - Create reports
   - Redundancy
   - Data consistency

3. Currently, any Forest Service aviation contract uses ABS:

- Helicopter Managers
- Air Attack
- Tanker Base Managers
- Forest Health
- COs and CORs
- Albuquerque Service Center
- Contractors

B. Equipment and Training Inventory System (EaTIS)

EaTIS is a Web-based, automated application used by federal agencies to execute, manage, and report on pre-season incident procurements.

EaTIS provides access to an aviation data entry system for sending information to the ABS for electronic payment data collection.

Vendors who use the EaTIS Web site find it a helpful resource for guidance through the process of electronically submitting offer data to the federal government.

Pre-season contracting data is inputted by contracting officers:

- Availability
- Availability Rates
- Flight Rates
- Modification

EaTIS will be replaced by the Virtual Incident Procurement (VIPR) program.

C. Albuquerque Service Center (ASC)

All payment documents are submitted to ASC for processing payment.

1. The ASC has the responsibility to:

   - Audit vouchers
   - Certify payment for disbursement

2. When payment documents for incidents are submitted, ASC uses the Incident Business Database (IBDB) program to:

   - Verify job codes for ABS.
   - Payment process for ABS and other incident payments.

D. Data Entry

You are the initial data entry person. ABS is a Web-based system with a disconnected client for remote use.

The system requires all contract aviation costs currently tracked on FS-6500-122 Flight Use Invoice to be entered electronically into ABS from the source location (helibase, tanker base, etc.) by aircraft managers or other designated persons.

After the initial data has been entered and submitted:

- The appropriate CO or designated COR reviews and approves each invoice.

- The CO or COR electronically selects approved invoices to be packaged for payment and approves the package using a Personal Identification Number (PIN) to indicate approval.

- After approval by the CO or COR, the vendor receives notification that a package is ready for approval.

- After successful review and application of a PIN by the vendor, the package is submitted to ASC IBDB for final processing of the payment.

- If the vendor requests any changes to the payment package, the CO/COR reviews the changes, accepts or rejects the changes, and sends the results to the vendor.

- The package is then submitted directly to the ASC IBDB for payment.

IX. ACCESS TO ABS

To access the ABS program, go to www.fs.fed.us/business/abs

The ABS site has different menu options:

- ABS Training (Tutorial)
- Frequently Asked Questions (FAQs)
- Disconnected Client
- ABS Reports
- Directions
- Passwords (e-Authentication)
  - Forest Service
  - Contractors
  - Non-Forest Service
- CO assigned PIN (required for invoice approval)
- Two methods for operating the ABS program:
  - Disconnected Client (downloaded for remote use)
  - Web-based application (Internet)

A. Disconnected Client (DC)

The DC is downloaded from the Internet onto your personal computer.

1. Advantage: you can enter data from just about anywhere:

   - Vehicle
   - Helibase
   - Hotel
   - Picnic table
   - Tree stump
   - Any other remote location

2. Features to using DC:

   - DC folder
   - Saves to hard drive
   - Data entry only
   - Create several days
   - Multiple contractors
   - Multiple air resource managers on one computer

3. DC logon

   After you have downloaded the DC version, follow these steps:

   - Open Disconnect Folder (start-up)
   - Wait for ####ms
   - Open Internet Explorer

- URL:

  http://localhost:8080/aviation/login.do

- Email ID

- Password

- Log-in

4. Now you should be at the ABS home page. Look at the menu tabs:

   - Home
   - Create Invoice (Add New Invoice)
   - View/Modify Invoice
   - Sync
   - Help
   - Sign Out

5. By selecting “Create Invoice” you can begin entering data:

   - Flight Date
   - Enter Full or Partial Contract Number
   - Contract Number
   - Contract Item Number
   - Registration/Tail Number

6. After you have entered the initial data:

   - The program will populate an invoice number for that specific flight and vendor.

   - If needed, you can “Add Flight Legs” to an existing invoice for continuation purposes.

   - Enter the required data indicated by the red asterisk.

7. View the “Current Flight Leg” screen. From this screen you can enter inputs:

    - View or Modify Flight Leg
    - Delete Flight Leg
    - Add Flight Leg
    - Add or Edit Accounting
    - Taxes or Fees

8. Go to the “Add or Edit Accounting” screen.

    - Note: The total charge/credit to any on job code cannot be less than zero.
    - Enter the required data indicated by the red asterisk.
    - From the “Additional Charges” screen you can:
        - View/Modify Charge
        - Delete Charge
        - Add/Edit Accounting
    - Enter the required data indicated by the red asterisk.

9. Now that you have entered all the required initial data, an invoice has been created that can be:

    - Delete Invoice
    - View/Print Invoice
    - Submit Invoice
    - View/Add Remarks

10. View the invoice.

    - All the information you entered was automatically converted into a FS-6500-122 Flight Use Invoice.

    - You can also add any remarks if you wish.

    - Sync as often as you possibly can! This is to keep the ABS program on your computer up-to-date with the server and to submit your invoice(s).

B. Web-Based Application

The Web-based application is a program that is run directly from the program (ABS) server via Internet.

Access to the system requires all users to have an individual USDA eAuthentication account and password.

A secure PIN number will be provided to COs and CORs.

Contractors will be issued a PIN number by the CO who administers their contracts.

The pin will be required for electronic approval of payment packages.

1. Each user must register in ABS the first time they log on.

   To access the server, log on to the ABS home page: www.fs.fed.us/business/abs

   - It is accessed from any Internet connection (home, office, etc.)

   - Provides the most current information (EaTIS).

2. The ABS program will have different status:

   - DRAFT – Data Entry/COR Entry Person
   - SUBMIT – Date Entry Person/COR Entry Person
   - COR_APPROVED (Web-based only) COR/CO only
   - SENT_TO_VENDOR (Web-based only) COR/CO only
   - SENT_TO_PAYMENT (Web-based only) Contractor/COR

3. COR or CO

   - Approve:
     - Reviews all Flight Use Invoices
     - Approve invoices
   - Create package:
     - Electronically select approved invoices to be prepared for packaging
   - Send to vendor:
     - Send approved invoices to vendor for review and approval
     - Can only use Web-based application

4. Contractor

    - Email notification
    - Review Flight Use Invoice
    - Verify all information is correct
    - Correct: sent to ASC for payment
    - Not correct: to the COR/CO for review

5. Contractor modified/COR reviewed

    - Email notification to COR
    - Review Flight Use Invoice with discrepancy
    - Approve/reject discrepancy
    - Approve: sent to ASC for payment
    - Reject: sent to ASC for payment, contractor can submit a claim to CO

6. Albuquerque Service Center

    - Audit each package
    - Certifies for payment
    - Sent to Foundation Financial Information System (FFIS)
    - FFIS sends to treasury for dispersing payment

7. Status chain flow

   Once a draft is complete and submitted:

   - The appropriate CO or designated COR reviews and approves each invoice.

   - The CO or COR electronically selects approved invoices to be packaged for payment and approves the package using a PIN to indicate approval.

   - After approval by the CO or COR, the vendor receives notification that a package is ready for approval.

   - After successful review and application of a PIN by the vendor, the package is submitted to ASC IBDB for final processing of payment.

   - If the vendor requests any changes to the payment package, the changes are reviewed by the CO/COR, changes are accepted or rejected, and results sent to the vendor. The package is then submitted directly to the ASC IBDB for payment.

8. Call the ABS help desk if you have questions (1-866-224-7677).

ABS Hands-on Exercise: This exercise is on pages 3.45 – 3.50 in your Student Workbook. Take turns (20 minutes each) entering the data into the ABS program. One student enters the data for "Scenario #1" and the other student enters data for "Scenario #2."

CONVERSION CHART – UNAVAILABILITY
CALL-WHEN-NEEDED MED & HEAVY-LIFT HELICOPTERS
SINGLE PILOT

UA	AV	Min. UA	Hrs UA		UA	AV	Min. UA	Hrs UA
0.02	0.98	15	1/56		0.52	0.48	435	29/56
0.04	0.96	30	2/56		0.54	0.46	450	30/56
0.05	0.95	45	3/56		0.55	0.45	465	31/56
0.07	0.93	60	4/56		0.57	0.43	480	32/56
0.09	0.91	75	5/56		0.59	0.41	495	33/56
0.11	0.89	90	6/56		0.61	0.39	510	34/56
0.13	0.88	105	7/56		0.63	0.38	525	35/56
0.14	0.86	120	8/56		0.64	0.36	540	36/56
0.16	0.84	135	9/56		0.66	0.34	555	37/56
0.18	0.82	150	10/56		0.68	0.32	570	38/56
0.20	0.80	165	11/56		0.70	0.30	585	39/56
0.21	0.79	180	12/56		0.71	0.29	600	40/56
0.23	0.77	195	13/56		0.73	0.27	615	41/56
0.25	0.75	210	14/56		0.75	0.25	630	42/56
0.27	0.73	225	15/56		0.77	0.23	645	43/56
0.29	0.71	240	16/56		0.79	0.21	660	44/56
0.30	0.70	255	17/56		0.80	0.20	675	45/56
0.32	0.68	270	18/56		0.82	0.18	690	46/56
0.34	0.66	285	19/56		0.84	0.16	705	47/56
0.36	0.64	300	20/56		0.86	0.14	720	48/56
0.38	0.63	315	21/56		0.88	0.13	735	49/56
0.39	0.61	330	22/56		0.89	0.11	750	50/56
0.41	0.59	345	23/56		0.91	0.09	765	51/56
0.43	0.57	360	24/56		0.93	0.07	780	52/56
0.45	0.55	375	25/56		0.95	0.05	795	53/56
0.46	0.54	390	26/56		0.96	0.04	810	54/56
0.48	0.52	405	27/56		0.98	0.02	825	55/56
0.50	0.50	420	28/56		1.00	0.00	840	56/56

CONVERSION CHART -UNAVAILABILITY

HOURS UNAVAILABLE	UNITS OF AVAILABILITY	UNITS OF UNAVAILABILITY
0	1.00	0.00
1	.93	.07
2	.86	.14
3	.79	.21
4	.71	.29
5	.64	.36
6	.57	.43
7	.50	.50
8	.43	.57
9	.36	.64
10	.29	.71
11	.21	.79
12	.14	.86
13	.07	.93
14	0.00	1.00

Contract and Pay Scenario 1 Exercise

On May 23, using Aircraft Rental Agreement XX-ARA-XXXX, you are assigned to an AS 350B2, pilot Pat Ross, owned by Sky High helicopters, P.O. Box xxxx, Coeur D'Alene, Idaho. You are to sling 5,000 lbs. of cabin logs and materials from the "Mile 63" helispot to the remote "Trapper Joe" cabin site on the Little Pend Oreille National Wildlife Refuge. According to the Project Aviation Safety Plan, you have three helicopter crewmembers to assist you – one of them is a trainee helicopter manager.

Jet-A is available at a nearby airstrip, designator SXQ. The project manager intends to save money by having the helicopter fuel at the airstrip instead of ordering a fuel truck. Flight rate is $1020 per hour. Standby rate is one-half the flight rate and is free equal to flight time. If the helicopter is kept overnight, there is a 3-hour daily guarantee.

Helicopter N190SH meets you at the airstrip (SXQ) at 0800 (the pilot came on at 0630). Meanwhile, the HECM crew is en route to Mile 63 helispot where you will base this operation out of. The pilot tells you that at departure from his base his Hobbs was 452.3 and now reads 453.1. You will fly with him to Mile 63 taking your pack (30 lbs.), remote hook and longline (45 lbs.), four swivels (5 lbs. each), and four woven wire chokers (5 lbs. each). The crew is bringing the fire extinguisher and crash-rescue kit.

List some items you will need to attend to before you depart the airport for the helispot.

You arrive at the Mile 63 helispot with a Hobbs of 453.6. After briefing, two HECM personnel, each with a 30 lb. pack, will be flown to the Trapper Joe cabin site to prepare to receive loads. Who might you use to supervise the operation at the other end? Upon return from this drop-off, the Hobbs is 453.9.

Two loads, each with five logs (160 lbs.), a longline with remote hook (45 lbs.), a choker (5 lbs.), and a swivel (5 lbs.) are flown in when the pilot calls to say he will be shutting down due to a problem with his torque gauge. On shutdown, the time is 1130 and the Hobbs is at 454.7. The company asks to have the helicopter brought back to SXQ to meet a mechanic to deal with the maintenance problem. Use this time to bring your paperwork up to date, particularly the AMD-23 (take 15 minutes). What other paperwork will reflect the day's events?

The ship was returned to service by the company's mechanic at 1400; he fuels and arrives back at the helibase at 1500. What more do you need to return the aircraft to contract availability (which, in this case would mean back in standby status)? At what time is the aircraft considered available for use? The Hobbs reads 456.5.

Two more sets of logs are flown in. Suddenly, a radio message from Trapper Joe indicates a crewmember has been injured and needs to be flown back to your location. It is 1600. The helicopter flies out empty and the individual is flown back to SXQ, where the helicopter shuts down. A coworker meets him to drive him to town and the helicopter fuels. At 1730 the ship flies from SXQ back to your location, receives a hook-up, and leaves for the cabin site with two 35 lb. nets (one 400 lbs. cargo, one 250 lbs. cargo, two 5-lb. swivels and a 5-lb. lead line) along with an internal load of 45 lbs. of tools and 150 lbs. of concrete blocks. The remaining crewmember is retrieved back to Mile 63. The Hobbs now reads 459.2. You will return with the crew in their vehicle. You intend to give him .7 to get back to his home base. In the course of completing paperwork, you realize that some of your flight time for the injury is included in the Hobbs time for the sling work. What might you do?

The ship is released at 1900. Will the pilot be off duty within his 14-hour duty day limitation, including ½ hour for post-flight tasks? Complete the AMD 23.

Exercise: ABS Hands-on

Flight Use Invoice (Helicopter Managers)

Scenario #1
Date: Today
Contract: AG-8371-C-06-9019
Item: 1
A/C: N817MA

Leg 1: Availability
User Unit: 0316
Order Type: **PROJECT**
Mission Code: AV-Availability
Incident: Bar Fire
Mission Code: 12 Helitack
Job Code: WFPR1708
Remarks – Aaron Schoolcraft – HELM 505-331-0952
A/V: 0700-2100

Leg 2: Helitack
User Unit: 0316
Order Type: **INCIDENT**
Incident: Bar Fire
Origin: TUC
Destination: Bar Fire
Mission Code: 12 Helitack
Job code: WFPR1708
Pilot: Jim Bo
Passengers: 2
Cargo: 200
Starting Hobbs: 900
Ending Hobbs: 900.5
Remarks: Helitack Bar Fire

Leg 3: Extended Standby
User Unit: 0316
Order Type: **INCIDENT**
Mission Code: ES – Extended Standby
Incident: Bar Fire
Mission Code: 12 Helitack
Job Code: WFPR1708
Starting Clock: 1800 (Time Zone)
Ending Clock: 2100 (Time Zone)
Remarks – ES for Driver (Tom Jones) and Pilot

Leg 4: Non-Availability
User Unit: 0316
Order Type: **PROJECT**
Mission Code: NA-Non-Availability
Incident: Bar Fire
Mission Code: 12 Helitack
Job Code: WFPR1708
Starting Clock: 1300 (Time Zone)
Ending Clock: 1500 (Time Zone)
Remarks: NA for Chip Light

Additional Charges:

Per Diem
User Unit: 0316
Mission Code: 12 Helitack
Job Code: WFPR1708
Per Diem Look Up: Tucson, Arizona – Pima Co.
People: 2
Remarks: ON-for Driver and Pilot

Service Truck Mileage
User Unit: 0316
Mission Code: 12 Helitack
Job Code: WFPR1707
Miles: 250
Remarks: ST – Mileage for Bar Fire

Charges
User Unit: 0316
Mission Code: 12 Helitack
Job Code: WFPR1708
Remarks: Tie Down Fees
Total: $100

!!!!!!!!! DELETE INVOICE !!!!!!!!!

Scenario #2 (Less Information)
Date: Today
Contract: AG-8371-C-06-9019
Item: 1
A/C: N817MA

Leg 1: Availability
User Unit: 0316
Order Type: **PROJECT**
Mission Code: AV-Availability
Job Code: WFPR1708

Leg 2: Water Drops
User Unit: 0316
Order Type: **INCIDENT**
Origin: TUC
Destination: Bar Fire
Mission Code: 10 Water Drops
Job Code: WFPR1708
Pilot: Jim Bo
Gallons: 2500
Starting Hobbs: 900.5
Ending Hobbs: 902

Leg 3: Extended Standby
User Unit: 0316
Order Type: **INCIDENT**
Mission Code: ES – Extended Standby
Incident: Bar Fire
Mission Code: 12 Helitack
Job Code: WFPR1708
Starting Clock: 1800 (Time Zone)
Ending Clock: 2100 (Time Zone)

Additional Charges:

Per Diem #1
User Unit: 0316
Mission Code: 12 Helitack
Job Code: WFPR1708
Per Diem Look Up: Tucson, Arizona – Pima Co.
People: 1

Per Diem #2
User Unit: 0316
Mission Code: 12 Helitack
Job Code: WFPR1707
Per Diem Look Up: Conus
People: 1

Service Truck Mileage
User Unit: 0316
Mission Code: 12 Helitack
Job Code: WFPR1707
Miles: 250 WFPR1608 (0156)
Miles: 150 WFPR1608 (0316)

Charges:
User Unit: 0316
Mission Code: 12 Helitack
Job Code: WFPR1708
Total: $100
Remarks: Relief Costs

Additional Entries:
½ Day AV – Aircraft Departed at 1000

!!!!!!!!! DELETE INVOICE !!!!!!!!!

Helicopter Management, S-372

Unit 4 – Flight Manuals

OBJECTIVES:

Upon completion of this unit, students will be able to:

1. Use a helicopter flight manual to reference the following sections: General, Limitations, Emergency Procedures, Normal Procedures, Performance and Supplements.

2. Use the appropriate flight manual section or supplement to complete a load calculation.

I. FLIGHT MANUAL BASICS

Although flight manuals (FM) are structured differently, they contain the same information.

Every helicopter is governed and limited by a respective helicopter flight manual.

A. Definition

Flight manuals are designed to provide pilots with general knowledge of a particular helicopter and information necessary for safe and efficient operation.

Some models were issued a Pilot Operating Handbook which served the same purpose.

B. Purpose of the Flight Manual

Flight Manuals are dictated by certification FAR (Part 27, etc.) and required by 14 CFR 91.9 to be available in aircraft.

Flight Manuals provide operators with:

- FAA mandatory information and procedures
- Manufacturer's recommended procedures
- Aircraft operating limitations
- Performance planning information
- Supplemental information, limitations, and performance

C. Guiding Principles

- Not all flight manuals are alike; they have different manufacturers and different regulatory requirements (U.S. vs. Foreign).
- Each FM specific to one registration number.
- Each FM and all supplements must be approved by the regulatory agency (FAA).
- Supplements are "mini-manuals" and must be read as a whole.
- The FM must be carried aboard the helicopter at all times.

D. Format and Organization

1. Regulatory approval sheet (cover):

   - Model number
   - FAA type certification/approval number
   - Registration and serial numbers
   - Regulatory agency
   - Signature and date

2. Table of contents

   - Not all FM have same sections or sequence of sections.
   - All FM have limitations and performance sections.

3. Page format

   - FM or supplement number
   - Regulatory approval
   - Revision number and date
   - Section and page number
   - Model designation

II. FLIGHT MANUAL SECTIONS

Almost all helicopter flight manuals are divided into different sections such as:

- Section I – General
- Section II – Limitations
- Section III – Emergency Procedures
- Section IV – Normal Procedures
- Section V – Performance and Supplements

One problem encountered in the field is that pilots and managers often read from the wrong page or section in the flight manual.

For instance, does it matter if you figure hover ceiling in ground effect with anti-ice on or anti-ice off? Maybe not, but it could at higher-pressure altitudes.

A. General Section

- Only found in some flight manuals
- Information about the FM itself
- Revision procedures and organization
- Terminology
- Symbols and abbreviations

B. Limitations Section

This section is mandatory in all flight manuals.

1. Basis of certification

    - Regulatory part or category is cited

2. Types of operation approved

    - VFR
    - IFR
    - Day/night
    - Icing, etc.

3. Flight crew requirements

    - Minimum flight crew
    - Weight
    - Location

4. Maximum seating configuration

5. Weight limits

    - Gross weight limitations (non-jettisonable)
    - External gross weight (jettisonable)

6. Weight-Altitude-Temperature (WAT)

    - Take off, landing, and in ground effect

7. Other limitations

    - Center of gravity
    - Airspeed (velocity never to exceed)
    - Altitude
    - Ambient air temperature
    - Maneuvering
    - Main rotor RPM
    - Torque
    - Gas generator RPM
    - Power turbine RPM
    - Exhaust gas temperature
    - Fuel and oil pressure/temperature
    - Fuel and oil grade requirements
    - Limitation placards
    - Instrument limitation markings

C. Normal Operations Section (FAA Approved)

1. Flight planning

   - Flight plans
   - Performance planning
   - Weight and balance

2. Pre-flight checks

   - Walk around exterior inspection
   - Checks at each station

3. Pre-start checks

   - Doors
   - Pax and restraints
   - Cargo
   - Controls
   - Switches

4. Engine starting

   - Starting sequence

5. Pre-takeoff checks

   - Checking gauges and systems

6. Takeoff

   - Engine RPM (N2)
   - Height-velocity limitations

7. Other normal procedures

   - Take-off
   - In-flight operations
   - Descent, approach and landing
   - Engine and rotor shutdown
   - Post-flight procedures
   - Engine power check procedures

D. Emergency Procedures Section (FAA Approved)

- Engine fires
- Engine failure (autorotation)
- Engine re-start procedures
- Engine over speed and under speed
- Hydraulic failures
- Electrical failures
- Fuel system failures
- Caution and warning systems

E. Performance Section (FAA Approved)

This section contains the power assurance information and charts.

1. Density altitude

   - Pressure altitude adjusted for variations in outside air temperature and humidity.

   - Density altitude charts must be used for some FM calculations.

2. Wind envelopes

   - Wind velocity and direction (controllability)

3. Airspeed/altitude information

   - Height-velocity curves/charts

4. Hover performance

- Determine which chart to use:
  - Is chart from basic FM or from a supplement?
  - In ground effect (IGE): Operating at such an altitude that the influence of ground effect is realized.
  - Out of ground effect (OGE): Hovering without the benefit of the ground effect cushion.
  - Skid height
  - Ambient conditions (temp, wind)
  - Power settings
  - Equipment kits installed
  - Accessories on/off
- Determine computed gross weight
  - Rate of climb
  - Noise levels
  - Engine power assurance check procedures

III. FLIGHT MANUAL SUPPLEMENTS

A. Purpose of Supplements

- Supplement information to the basic flight manual.
- Supplement for optional equipment or approved procedures.
- Describes changes in operating procedures, limitations, and performance.
- Must be approved by the regulatory agency.
- Relationship with supplemental type certificate.
- Arranged like the basic flight manual.
- Limitations, normal operations, emergency operations and performance sections.
- Necessary procedures or data is provided, specific to the equipment installed.
- Specific changes in limitations or performance is critical.
- May defer to basic flight manual section when no change is required.

B. Load Calculation Form

- Required by some natural resources agencies.
- Critical flight manual information is required to complete load calculations.
- Used to ensure that the allowable payload is not exceeded.

C. Weight and Balance Data Sheet

- Required by FAR.
- Located in maintenance logbook or FM.
- Document equipment installation or removal.
- Displays current aircraft weight and center of gravity information.

D. Maintenance Log Book

- Required by FAR.

- Documentation of inspections and maintenance performed by mechanics.

- All entries must be signed and dated.

E. Supplemental Type Certificate (STC)

Definition: Supplements the original type certificate issued. Necessary when the aircraft is altered by modification or installed equipment.

1. Examples:

   - Some avionics installations
   - Rappel brackets
   - Fixed external equipment (tanks, racks, pods)

2. STC key information:

   - STC certificate number
   - Holder's name
   - FAR part cited
   - Original type cert number
   - Make and model(s)
   - Description
   - Limitations/conditions
   - Signature and date
   - Serial number

F. Remember:

- Never take the flight manual out of the helicopter without the pilot's approval.

- As a module member, you may need to refer to the flight manual for certain information.

- Let the pilot know what you want and get their permission before you start reading the manual.

- When you get a helicopter you have never worked with before, review the flight manual with the pilot. You will probably learn together.

- Use only performance charts found in the flight manual. These are the only approved charts.

Helicopter Management, S-372

Unit 5 – Load Calculations

OBJECTIVES:

Upon completion of this unit, students will be able to:

1. Describe the use of load calculations and the helicopter manager's role.
2. Identify basic elements of helicopter performance.
3. Accurately complete a load calculation.
4. Identify errors in completed load calculations

I. THE USE OF LOAD CALCULATIONS AND THE MANAGER'S ROLE

The load calculation form was developed by the FS/DOI to help pilots display performance capability and ensure that allowable loads do not exceed limitations.

A. Requirements

The AMD-67/FS-5700-17 load calculation is required for all helicopter flights conducted on interagency fires (for interagency fires, all participating agencies follow the IHOG).

Some agencies use the "load calc" to predict performance on all flights associated with both fire and non-fire helicopter missions.

Many accidents have happened that involved aircraft that were operating in conditions that were too high or too hot for the performance capability of the aircraft.

If the contract or agency requires a load calculation, you must ask the pilot to complete the interagency load calculation form.

The load calculation helps pilots and users predict helicopter capability within specific parameters. It helps ensure that helicopters are loaded within their limitations.

The load calculation is reliable only if a power assurance check verifies the health of the engine. A power assurance check ensures that the aircraft's engine can perform as indicated in the performance charts.

For most models of helicopters, the pilot must complete the power assurance check by going to the appropriate charts in the flight manual.

The load calculation, when used in conjunction with a current power assurance check, confirms the aircraft has enough power to perform the mission.

B. Manager's Role

If load calculations are the pilot's responsibility, why do managers need to be involved?

A pilot may not do a load calculation often enough to be completely comfortable with the process.

The helicopter manager should be very familiar with the load calculation to ensure accuracy and safely manage critical features of the mission (the allowable load, selection of landing areas, fuel burn, etc.).

II. BASIC ELEMENTS OF HELICOPTER PERFORMANCE PLANNING

Being familiar with basic elements of performance will help the manager monitor load calculations even when working with unfamiliar models.

A. Atmospheric Pressure

Atmospheric pressure is the weight of the column of air above you (the pressure varies with the weather).

What is being measured in the performance prediction process begins with understanding how atmospheric pressure and altitude relate to air density and aircraft performance.

B. Altitude and Air Density

Aircraft instruments use changes in atmospheric pressure to measure altitude above a reference point.

At sea level, the cool, dense air provides optimum helicopter performance. But at higher altitude, or hotter conditions, the air is less dense and performance is significantly reduced.

To predict what a helicopter can do at different altitudes, air temperatures, and densities, there must be a standard "starting point" to measure against.

This starting point is at sea level, on what is called a “standard day.”

1. Standard day

   Standard performance charts for all models of helicopter are measured against what the aircraft was able to do at sea level, as a starting point, with an outside air temperature of 59 degrees Fahrenheit (15° C) and atmospheric pressure of 29.92.

   From this standard sea level pressure and temperature, the charts display the capability of the aircraft at various altitudes on up.

   Why does this matter to you?

   Because once you understand what the performance charts tell the pilot (and you) about the ability of the aircraft to perform under changing conditions, the better you will be able to review the load calculation for accuracy and apply the results to operations in the field.

2. Standard pressure gradient

   As the air becomes less dense with an increase in altitude, under standard conditions, atmospheric pressure is reduced by about one inch of mercury for each 1000-foot gain in altitude.

3. Standard lapse rate

   There is also a standard loss in temperature, called the “lapse rate” of 2° C (3½° F) for every 1000-foot increase in altitude.

   Temperature is required as input to the performance chart. With this knowledge, the air temperature at a distant landing area can be estimated until an actual temperature can be obtained.

4. Altitude

Altitude is also required as input to performance charts. The aircraft's altimeter reads an increase or decrease in air pressure as an increase or decrease in altitude.

The altimeter tells how high the aircraft is above whatever pressure setting is dialed into the altimeter's window.

To navigate and know the altitude of the helicopter in relation to the terrain it is flying over, the pilot obtains an "altimeter setting" from flight service or from airport observations. This tells the pilot the height of the aircraft above sea level.

5. Terrain

Terrain (elevation) is also measured as height above sea level. If a mountain range is 5000 feet in elevation, pilots know they must fly well above 5000 feet mean sea level indicated on the altimeter, to clear the mountains.

The altimeter is adjusted with new settings as the helicopter moves into new areas. The load calc sheet asks for PA, or "pressure altitude."

C. Pressure Altitude

What is the difference between pressure altitude and other types of altitude?

Pressure altitude is the altitude of the aircraft when the altimeter is set to 29.92, instead of to the current altimeter setting for sea level today.

Why? Because the performance given in the charts was based on the aircraft's height above 29.92, which in standard conditions is at sea level.

Today, the pressure plane of 29.92 might be at a very different level than sea level. We want to know how the helicopter will perform compared to how it performed in the charts.

If you do not have the PA, the next best setting to use is the elevation from the map (of the place you are taking off, landing, or otherwise holding a hover in).

Obtain an accurate PA as soon as possible, as it might impact your performance—especially at high altitudes or on hot days.

D. Outside Air Temperature (OAT)

True ambient air temperature at any given altitude. Usually measured in Celsius (C).

III. ACCURATELY COMPLETE A LOAD CALCULATION

Understanding the following terms and components of performance prediction will make the load calculation process easier to grasp and apply.

A. Empty Weight

The weight of the helicopter (found in the flight manual, weight and balance section) including fixed equipment, unusable fuel, undrained oil, and hydraulic fluid.

B. Equipped Weight

The empty weight plus the weight of lubricants and any equipment required by the mission or contract.

C. Operating Weight

Add equipped weight, weight of flight crew, and weight of fuel (use 7 lbs. per gallon for fuel weight) to obtain the operating weight of the helicopter.

D. Computed Gross Weight

Pilots use the hover ceiling performance charts to obtain the computed gross weight (which is entered on line 7b of the load calculation form).

Reduces maximum gross weight (the most the aircraft can safely weigh) to the weight allowed for the temperature and pressure altitude at which the aircraft may operate in situations that require the most power, such as take-offs and landings.

Take-off, landing, or external load work involves holding a hover that requires more power than cruise flight.

E. Supplemental Equipment

Supplemental equipment will have a "supplement" in the flight manual. An example is the sand filter on the A-Star helicopter.

In some instances, this can affect the load calculation through supplemental charts that provide additional weight or temperature restrictions.

Ask the pilot about supplemental equipment.

F. Weight Reduction (download)

A fixed weight that differs for each make and model of helicopter.

This reduces the total allowed weight of the aircraft, and provides an increased margin of performance capability and safety.

Intent is to reduce, or "download" from the performance (computed gross weight) of the aircraft which gives an adjusted weight.

The amount of reduction for each model of aircraft is found in the contract.

G. Adjusted Weight

Subtract the computed gross weight from the weight reduction; the adjusted weight is recorded in line 9.

H. Selected Weight

Line 9 is the adjusted weight, having been through the "computation" of the performance charts, and with the download subtracted, if appropriate.

Line 10 is the gross (total) weight limitation of the helicopter for that situation (jettisonable or non-jettisonable).

Choose whichever is less: line 9 (adjusted weight) or line 10 (the limitation) and enter in line 11.

I. Gross Weight Limit

The gross weight limit of a helicopter (also called maximum gross weight) is a limitation on how much the helicopter can weigh.

A limitation to the operation of an aircraft, found in the flight manual, must never be exceeded.

- Why can some models of helicopters weigh more in the air than on the ground?

  The A-Star, Lama, and some other models can lift more than they can safely support during a landing.

- When would you encounter this?

  This might be encountered as a helicopter flies external cargo on a long line and is hooked up without having to land.

  Remember, ground effect can decrease the amount of power required for a helicopter to hold a hover.

  For many models, the chart for hover ceiling IGE assumes that if you are in ground effect, you are landing.

  Because of this assumption, the IGE performance chart may stop at structural limitations.

- Which chart is the most conservative?

  Remember, OGE requires more power. Even though the OGE chart looks at all of the performance, it is more conservative.

  This is because computed gross weight will be less with the OGE than the IGE chart at the same altitude and temperature.

  Unless the site is known to be HIGE, the OGE chart should be used.

  The maximum gross weight limit of the B2 A-Star helicopter, when in the air, is 5512 lbs.

EXERCISE 1: Load Calculation

This exercise will give you experience in completing a load calculation form.

EXERCISE 2: Load Calculation AS350 B3 A-Star

Use the inputs below to complete the load calculation form:

- AS350 B3 equipped weight: 2985 lbs
- Pilot Hal Copter weight: 200 lbs
- Departure: 6500 ft, 25° C
- Destination: 8000 ft, 20° C
- 75 gallons fuel
- Skid limit: 4961
- Jettisonable limit: 6173
- Weight reduction: 175 lbs

EXERCISE 3: Load Calculation

This exercise will give you experience in completing a load calculation form with complicated information.

United States Department of the Interior
National Business Center
Office of Aircraft Services
300 E. Mallard Drive, Ste. 200
Boise, ID 83706-3991

U.S. Department of the Interior
NBC National Business Center

In reply refer to: 113A2

March 24, 2003

OAS INFORMATION BULLETIN NO. 03-01

To: All DOI Aviation Operations

From: Michael A. Martin, Acting Director, OAS

Subject: Clarification of Helicopter Load Calculation Method

The Department of the Interior is providing clarification of the helicopter load calculation method. This clarification is specific to HIGE non-jettisonable load operations and the OAS-67, Helicopter Load Calculation, item 7 of the specific instructions which states:

> COMPUTED GROSS WEIGHT - Obtain weight from A/C Hover-in-Ground-Effect (HIGE) Chart using External Load Chart if available. Sling load missions and adverse terrain or adverse weather, etc., flights will be computed from A/C Hover-Out-of-Ground-Effect (HOGE) charts.

NOTE: DO NOT use performance charts from any source other than that specific (by registration) helicopter's approved rotorcraft flight manual.

The intent of the above language is to use the performance chart that shows the best performance to determine the computed gross weight. In some aircraft, the HIGE charts stop at the maximum internal gross weight limit (commonly known as a "skid limit"), while the HOGE charts extend to the maximum external gross weight limit. If you limit HIGE operations by the use of only HIGE charts, you may not be taking advantage of the best performance before applying the weight reduction. It is perfectly acceptable to use a HOGE chart to determine the best performance for either HIGE or HOGE operations (the opposite is not true). The HOGE chart is more restrictive but is generally expanded to the external load limit of the aircraft. The use of the HOGE chart to determine computed gross weight will generally only be an advantage at temperatures below 30 °C and 4,000 feet pressure altitude.

Example: An AS-350B2 at 3,000 feet pressure altitude and 30 °C using the HIGE chart reveals a computed gross weight of 4,961 lb. Applying the weight reduction of 160 lb leaves a selected weight of 4,801 lb. Using the HOGE chart for the same conditions reveals a computed gross weight of 5,114 lb. Applying the weight reduction of 160 lb leaves a selected weight of 4,954 lb. This is a difference of an additional 153 lb using the performance calculation from the HOGE chart.

Under no circumstances shall the maximum internal gross weight limit be exceeded with a non-jettisonable load.

Michael A. Martin, Acting Director

OAS-25
(4/84)

UNITED STATES DEPARTMENT OF THE INTERIOR
OFFICE OF AIRCRAFT SERVICES

SAFETY ALERT

No. 02-01 **April 26, 2002**

Subject:
Bell 212 Helicopter Load Calculations

Area of Concern:
Helicopter Operations

Distribution:
All DOI Aviation Operations

Discussion: Recently there have been inquiries from the field regarding the proper procedures and proper performance charts and limitations used in the completion of the Helicopter Load Calculation for the Bell 212. Additionally, procedures for performance planning for the Helicopter Load Calculation with the availability of the Bell 212's Increased Takeoff Horsepower Supplement (Flight Manual Supplement FMS-29) and Increased Weight Altitude Temperature Limit Supplement (FMS-35) has further confused the issue of proper completion of the Helicopter Load Calculation process.

The following information should help clarify the procedures for completing the Helicopter Load Calculation for this helicopter and its enhanced performance supplement kits. The information and instructions are valid for both the Department of the Interior and Department of Agriculture operations.

The Helicopter Load Calculation process is an Interagency (OAS or USFS) planning document. It is a requirement of those agencies to assist in safe flight operations. It is not a Federal Aviation Regulation requirement and it is not a helicopter manufacturer's requirement. The process was instituted by both agencies in 1981 to ensure that proper performance planning was being done during natural resource helicopter missions.

Instructions: The following are instructions regarding the proper completion of the Helicopter Load Calculation for the basic Bell 212 (reference the Bell 212 Rotorcraft Flight Manual FM-1, Revision 3, 01 May 1998) with Cargo Hook Flight Manual Supplement (FMS-3, Revision 1, 12 September 1997) kit option. Additionally, procedures for the completion of the Load Calculation process with the Bell 212 Increased Takeoff Horsepower Supplement upgrade kit (FMS-29, Reissue, 14 August 1995) and the Bell 212 Increased Weight Altitude Temperature Limit Supplement upgrade kit (FMS-35, 22 March 1996) are included.

Specific instructions, per the Interagency Helicopter Operations Guide, for completing the Load Calculation form for all models of helicopters can be found on the inside covers of the Helicopter Load Calculation booklets of forms FS-5700-17 and OAS-67.

Lines 1-6: Self-explanatory.

Line 7: For both HIGE and HOGE columns use external cargo charts. *Do not use Weight-Altitude-Temperature charts found in the Limitation Section.*

For the basic Bell 212 use Flight Manual Supplement FMS-3, Cargo Hook Figure 4-1 IGE Takeoff Power (Heater Off), page 7 and Figure 4-2 OGE Takeoff Power (Heater Off), pages 13 and 14.

For the Increased Takeoff Horsepower option version use Flight Manual Supplement FMS-29, subsection labeled External Cargo, Figure 4-5 IGE Takeoff Power (Heater Off), page 30 and Figure 4-5 OGE Takeoff Power (Heater Off), pages 26 and 27.

For the Increased Weight Altitude Temperature Limit (FMS-35) option version use Flight Manual Supplement FMS-29, subsection labeled External Cargo, Figure 4-5 IGE Takeoff Power (Heater Off), page 30 and Figure 4-5 OGE Takeoff Power (Heater Off), pages 26 and 27. **Note**: The use of FMS-29 is due to FMS-35 not having any External Cargo charts and a FMS-35 version has the FMS-29 kit installed.

Line 8: Use the 390 pound fixed weight reduction for all versions of the Bell 212.

Line 9: Self-explanatory.

Line 10: Use the Weight-Altitude-Temperature chart found in Section 1, Limitations, of the Bell 212 Rotorcraft Flight Manual.

For the basic Bell 212 use the Rotorcraft Flight Manual (FM-1) Section 1, Limitations, Figure 1-1, Weight-Altitude-Temperature chart, page 1-11.

For the Increased Takeoff Horsepower option version use the Rotorcraft Flight Manual (FM-1) Section 1, Limitations, Figure 1-1, Weight-Altitude-Temperature chart, page 1-11. *There is no WAT chart in FMS-29 therefore revert back to basic manual (FM-1).*

For the Increased Weight Altitude Temperature Limit option version use the Flight Manual Supplement FMS-35, Section 1, Limitations, Figure 1-1, WAT chart, page 2.

Line 11: Make the decision as to whether mission load is jettisonable or nonjettisonable and then whether it will be a HIGE or HOGE operation. Then follow the instructions for Line 11 on the inside cover of the Helicopter Load Calculation booklet (FS-5700-17 or OAS-67).

Lines 12-16: Self-explanatory.

For further detailed information see the attachment located at http://www.aviation.fs.fed.us/library/alerts/attachment.pdf or if you have any further questions regarding this process contact Morgan Mills, National Helicopter Standardization Pilot, U.S. Forest Service, NIFC at (208) 387-5614. Simultaneous distribution of this aviation safety alert is being made by the U.S. Forest Service.

Robert Galloway
Aviation Safety Manager

Helicopter Management, S-372

Unit 6 – Pre-Use Inspections

OBJECTIVES:

Upon completion of this unit, students will be able to:

1. Identify elements of a pre-use inspection on a helicopter and fuel service vehicle.

2. Identify and complete pre-use record keeping forms.

I. WHY INSPECT?

A. Quality Assurance

DOI and USDA Forest Service recognize the need for aviation quality assurance; they each accept the other's carding.

- FAA limits their oversight to point-to-point flights (Part 135), external load (Part 133), and agriculture application (Part 137) flight operations.
- Natural Resource Flight Operations has unique training and qualification requirements.
- DOI and USDA have special equipment and mission requirements that go well beyond any FAA oversight.

B. CWN Manager Forms Kit

As part of the process, the vendor companies and pilots complete these forms:

- AMD 68 Inspection Report
- AMD AR-31 Pilot Verification Form
- AMD 64D Personnel Data Info and Pilot Carding
- AMD 69/USFS 5700 Pilot Evaluation and Quality Check

C. Contract/Agreement

- Review the helicopter contract/agreement with the company representative, usually the pilot.
- Take time to read it—most contain standard language, but there can be dramatic regional differences.
- To complete pre-use inspections and administer the contract accordingly, you need to know what is stated in the contract/agreement.

II. PRE-USE INSPECTION PROCESS

Initial inspections of aircraft and pilots are conducted by qualified maintenance and pilot inspectors using a standard process from the Forest Service and Aviation Management.

After a comprehensive inspection to ensure vendor personnel and equipment meet contract specifications, a card is issued.

A. Inspection Requirements

Procurement document compliance – different standards for different missions:

- Point-to-point
- Wildland fire
- Mountain

B. Special Equipment

- Interagency fire
- Off shore flight operations
- ACETA
- Aerial ignition
- Rappel
- Short haul

C. Special Piloting Skills

- Water bucket operations
- Longline
- Rappel/short haul
- Mountain flying
- Aerial ignition
- Shipboard landings

D. Unique Support Equipment

- White strobe lights
- Painted rotor blades
- High skids
- FM radios
- Extended baggage compartments
- Animal tracking antennas
- Aircraft floats

III. PRE-USE INSPECTIONS

Pre-use inspections of the aircraft and fuel service vehicle are done to enforce contract compliance.

All parties are required to comply with the contract. The pre-use inspection sets the tone for your future relationship with the contractor.

A. Pre-Use Checklist

Use the pre-use checklist to ensure contract conditions are being met.

1. Review the following items with the pilot and mechanic (these items should be noted in the aircraft maintenance log):

   - Approval cards and duty logs
   - Aircraft and maintenance logs
   - Additional equipment
   - Fuel servicing vehicle
   - Aircraft flight log
   - Pilot flight time/duty day log
   - Driver time duty day log
   - Mechanic duty day log
   - Aircraft fuel facility inspection log
   - Aircraft current equipped weight

   Note: Recreational or personal flying doesn't count against pilot flight time.

2. With the pilot and mechanic, identify what type of inspection program the aircraft is under and document (Progressive Maintenance Schedule, 50- or 100-hour inspection, etc.).

   - Have power assurance checks been completed? If so, how often and when was the last one completed? Are they being graphed?

   - Any entries on major component changes, or components due, or coming due for inspection? If so, keep air operations (or whoever you are working for) informed.

     Stay informed on time remaining on any maintenance requirements or inspections coming due and duration of the maintenance or inspection process.

   - Any noted entries of aircraft damage? If so, document on the checklist or in the daily diary.

3. Review the aircraft and fuel service vehicle data cards.

   It is important to check the vendor name, aircraft registration and vehicle license number, and expiration dates.

4. Review pilot and mechanic qualifications.

   Is the pilot authorized to perform any maintenance? Chip light inspections? Is it in writing?

Aircraft Maintenance Log Review: The log page shown on the slide is an example of good maintenance entries (the areas blacked out were done for privacy). From all the information on this log page, what should you note?

B. Check Cards

- Aircraft Data Card
- Pilot Qualifications Card
- Mechanic Qualifications Card (if required by contract)
- Service Vehicle Data Card
- Verify if the aircraft and pilot are carded for the missions intended.
- Verify if the mechanic is carded for the aircraft.
  - The mechanic must be carded for the aircraft on a Forest Service contract.
  - DOI does not require the mechanic to be carded.

What missions are planned? Is longline initialed with a vertical reference check? Is the medical certificate still current?

Some pilots work as relief for multiple companies and must possess a card for each.

C. Helicopter Manager Responsibilities

- Ensure that all required equipment is installed on the aircraft and the appropriate cards are valid for the pilot and service vehicle truck since the date of issue.
- Keep the Aircraft Contract Daily Diary current. This needs to occur on the first day and continue until released.
- Complete the Helicopter Information Sheet as soon as you marry up with an aircraft.

- Helicopter managers use the following forms regularly:
  - Pre-Use Inspection Form (HCM-2)
  - Helicopter Information Sheet (HCM-6)
  - Pilot Flight Time/Duty Day Cumulative Log (HCM-12)
  - Mechanic Duty Day Cumulative Log (HCM-14)
  - Fuel Service Vehicle Fuel Quality Control Log (vendor provided)

IV. HELICOPTER CONDITION

A thorough walk-around inspection of the aircraft is necessary to complete the helicopter pre-use checklist.

This helps verify that the aircraft is in compliance with contract/agreement requirements.

A. Documentation

Regardless of how insignificant damage may seem, document any finding on the pre-use checklist or in your Aircraft Daily Diaries.

The only proof the aircraft was damaged prior to arrival is the documentation you provide.

B. Compliance

Remember, if the aircraft is not in compliance with the contract/ agreement, it cannot be used until compliance has been met.

Contact a maintenance inspector if you have questions.

- Are the seatbelts faded and worn? Can you read the manufacturer's information label? Are the required shoulder harnesses available?

  Seatbelt Note: Shoulder harnesses (either single- or double-strap) for each aft cabin occupant are required for all DOI and USFS helicopters. Shoulder harness straps and lap belts shall fasten with a single-point, metal to metal, quick-release mechanism.

- Is high skid gear required? Is closed circuit or splash fueling authorized at the government's request in the contract? Is the proper equipment available?

- Pilot proficiency with the required equipment is part of the contract/agreement.

  As a manager, you need to know how to use this equipment. Ask the pilot to show you how to program and operate the radios and GPS unit.

  Most pilots prefer to program their own equipment, but you also need to understand how to work them. Most contracts require the FM radio to be narrowband capable. Confirm your frequencies!!

  You need to know what DATUM (WGS 84, NAD 83, NAD 27) is set up (and the local standard) on the GPS unit, and what coordinate system is being used for the incident.

  Is an FM auxiliary cable available and is it compatible with your handheld radio?

- The co-pilots controls have three parts.

  In a Type 3 helicopter, the cyclic and collective must be removed. The tail rotor pedals can still be installed but must be disabled.

  For the Type 2, only a helicopter crewmember or helicopter manager that has been authorized and trained "to occupy a position of pilot controls" can occupy the seat when the controls are in place.

V. REQUIRED EQUIPMENT INSPECTION

- Current contract must be in the aircraft
- Hazmat Guide with current exemption
- Pilot personal flotation device (PFD)/survival and first aid kits
- Flight manual with performance charts
- Pilot proficiency with required equipment
  - Radio systems
  - GPS
  - Load calculations
  - Performance charts
- The pilot is required to have a PFD when conducting flight operations beyond power off gliding distance to shore.
- Survival and first aid kit and an emergency locating transmitter (ELT) are also required.
  - Make sure that these are physically located in the aircraft and the contents meet the requirements in the contract/agreement.
  - When accessible, check the date on the ELT battery to ensure it is current.

- Where would you find the aircraft's current weight?
  - The most current weight used is found in the weight and balance section of the flight manual.
- When should turbine engine power assurance checks be done?
  - Shall be done on the first day of operation, and there after every 10 hours of flight.
  - Ideally, when you first marry up with the ship.
  - Have the pilot prepare a load calculation.

VI. FUEL SERVICE VEHICLE INSPECTION

Upon completion of the helicopter inspection, conduct a thorough walk around of the fuel service vehicle. Again, use the pre-use inspection form!

The vehicle is required to have specific equipment to meet both DOT regulations and contract requirements. Check the following:

- Fuel truck card and expiration
- Fuel quality log
- Spare fuel filter and "O" ring
- Filter change date (placard)
- Absorbent material for spills
- Ensure it has a current card as well as the items identified in the contract/agreement and resource order.
- License plate number on card matches that on vehicle and on resource order.

- Expiration date

- The pre-use inspection form is not always all inclusive; make sure you refer to the contract/agreement for what is required.

- Ask for the fuel quality control log – this is required to be maintained in the service vehicle.

  – Ensure all inspections required by the agreement/contract are being complied with.

  – There should be an entry for each day they are operating under the agreement/contract.

- Are two extinguishers available, one on each side, and are they current? Inspect annually.

- Ensure the filter has been changed within the last 12 months or in accordance to the manufacturer's schedule.

- Verify that a spare fuel filter is on the vehicle along with manufacturer instructions on the proper way to change out the filter. These instructions need to be somewhere in the vehicle.

- Ensure the fuel filter has been changed in accordance to the procurement document and that it has a placard on the fuel filter housing with the date.

- Ensure the vehicle has the required DOT placards and that the fuel type and "No Smoking" has a minimum of 3-inch lettering.

- Is there a screen on the nozzle?

- Are the bonding cable and clips in good repair?

- Is the fuel being inspected daily? Any notes about water or sediment?

- Ensure there is enough absorbent material to contain a 5-gallon spill.

VII. SUMMARY

- As a helicopter manager, completion of the pre-use inspection is critical.
- The inspectors see a snapshot, you see the whole picture.
- If you have questions contact your DOI AM and USFS inspectors.
- Submit SAFECOMs. It is the only tool we have to track trends.
- Remember: If it doesn't meet the contract specifications, don't use it.

A-218 Aircraft Pre-Use Inspection video: Refer to your pre-use inspection form as you view the video.

Helicopter Management, S-372

Unit 7 – Helicopter Maintenance

OBJECTIVES:

Upon completion of this unit, students will be able to:

1. Describe the pilot's responsibilities with helicopter maintenance.

2. State the purpose of a maintenance inspector's role in contracting.

3. Describe the helicopter manager's role with regard to helicopter maintenance.

4. List three items that should be examined in the aircraft's maintenance logbook prior to utilization of the aircraft by government personnel.

5. Given an unscheduled maintenance issue, explain who to notify and the process of returning the aircraft to contract availability.

I. 14 CFR PART 1 – MAINTENANCE

A. Maintenance includes:

- Inspection
- Overhaul
- Repair
- Preservation
- Replacement of parts

B. Part 91.3

The owner or pilot of an aircraft is primarily responsible for maintaining the aircraft in an airworthy condition.

II. PILOT'S ROLE/RESPONSIBILITY

A. Documentation of Problems

- Pilots must write up any maintenance discrepancies in the aircraft logbook.

- A mechanic must clear any discrepancies and the pilot will then sign off.

- A DOI/USFS agency maintenance specialist must also be notified and may wish to speak to the pilot or mechanic.

- A SAFECOM must be completed and may include information or comments from the pilot.

- Some maintenance items require the aircraft to be run up; some require the aircraft to be flown before the discrepancy can be cleared.

- The pilot will make an entry in the log that the event has been accomplished.

B. Daily Pre-flight Checks

- It is the pilot's responsibility to ensure a daily preflight is performed on the aircraft.
- Give the pilot uninterrupted time to do the preflight. This is not the time to be loading the aircraft and planning out the mission.
- On some helicopters, these inspections are performed by a mechanic and are entered into the aircraft records.

C. Airworthy

In conformance with its type design or properly altered condition and in a condition for safe flight.

1. Is it airworthy?

   - Logbook entries for inspection
   - Correction of discrepancies
   - Deferred maintenance discrepancies

2. Deferred maintenance items are:

   - Generally not on the minimum equipment list; therefore, may not have to be corrected immediately.
   - Documented in the aircraft's maintenance log book.
   - Corrected and signed off on within a specified timeframe.

D. Safe for Flight?

During pre-flight, the pilot checks for acceptable wear.

91.7(b) The pilot in command of a Civil Aircraft is responsible for determining whether that aircraft is in a condition for safe flight.

E. Power Checks

A power assurance check shall be accomplished on the first day of operation and thereafter within each 10-hour interval of contracted flight operation (unless prohibited by environmental factors such as weather, smoke).

Each helicopter manufacturer has a different method for performing power checks; have pilot explain the correct procedure using the flight manual.

1. Trend and HIT checks are NOT power assurance checks.

2. Document power assurance check information on IHOG form HCM-4.

   Chart definitions include:

   - OAT: Outside Air Temperature
   - N1: Gas producer speed
   - N2: Engine RPM
   - TDT/TOT/TPT/ITT/EGT/MGT: Engine temperature
   - EPR: Engine Pressure Ratio
   - Correction factor: A value related to Tail Pipe Temperature (TPT) on some aircraft such as Lama and Alouette.

- Chart reading: Temperature value, percent of RPM or torque found on performance charts.

- Margin difference: The difference between the aircraft performance and chart reading.

3. Allow time for pilot to consult power assurance charts in flight manual and chart the results in order to visualize trends.

4. Some models such as the AS 350B3 A-Star produce an immediate power assurance check result from a digital engine computer.

   Some helicopters identify power assurance checks as "Correct" or "Incorrect."

   An "Incorrect" status check is an aircraft that is not considered airworthy and is unavailable until corrected.

F. Pilot Functioning as Mechanic

Read the contract the aircraft is operating under. Not all contracts are the same when it comes to pilot and mechanic duties.

If the contract allows the pilot to function as a mechanic, the pilot must meet all the mechanic qualifications of the contract.

This may affect flight and duty hour limitations. Additionally, the pilot must be approved by the contractor's operations specifications.

In accordance with 14 CFR 43.3(h), 43.5 and 43.7, pilots may perform preventive maintenance on the aircraft.

III. DOI/USFS MAINTENANCE SPECIALIST DUTIES

- Inspects fixed wing, rotor wing, and associated equipment for compliance with contracts.

- Develops and maintains technical libraries on aircraft, aircraft maintenance, and the equipment associated with operational aviation missions.

- Assists managers/users with maintenance, operational issues, or questions/concerns that surface while on contract.

- Return aircraft to contract availability after an unscheduled maintenance event.

A. Inspectors make decisions based on:

- Contract requirements
- Inspector's experience
- Contractor's ability and attitude

B. What about the FAA?

1. Certifies companies and their operating/maintenance programs.

2. Sets minimum requirements for:

    - Personnel qualifications

    - Training

    - Company organization

    - Operating specifications

    - Maintenance and inspection program

3. Return to service

- Return to service is FAA terminology!
- The approval for returning to service is the mechanic's responsibility.
- Returning the aircraft to contract availability is a DOI/USFS maintenance inspector's responsibility.

C. What are your duties?

1. Understand your responsibilities within the contract and agency/bureau policy.

- Facilitate maintenance through awareness and planning.
- Report your findings to safety (SAFECOM) and DOI/USFS maintenance inspectors.

2. Your aircraft is broken, what do you do?

- Call a USFS/DOI maintenance inspector.
- Make sure vendor and maintenance inspector are in communication, if necessary.
- Document all communications.
- Do not continue with operations until maintenance inspector gives approval.
- Once approval has been given, notify vendor.

3. Check maintenance log book

   - Hobbs time (list on pay document).
   - Any deferred maintenance:
     - Deferred aircraft discrepancies must be logged.
     - Time limitations identified until repairs are completed.
     - Minimum equipment list items are generally not deferred.
   - Aircraft discrepancies (squawks) – broken door latch, navigation or strobe light, etc.
   - Recent and upcoming major component changes Airworthiness Directives (AD) and service bulletins coming due.
   - Pre-flight or daily check signed off.
   - Last 100 hr and annual; next due including other phases (30 hr if applicable, etc.).

4. Expect to see the following entries in logbook:

   - A/C inspected and found airworthy for daily use.
   - 100 hr inspection c/w (complied with) IAW (in accordance with) maintenance manual and all S/B (service bulletins) c/w. Aircraft is airworthy.
   - Next scheduled maintenance due.
   - Any discrepancies and corrections.
   - All entries have date, time, license number, signature, and next due date if applicable.

IV. IMPACT

Your actions affect others who are depending on you. What are your decisions and actions based on?

A. Identify Maintenance Problems

- Understand the basic scheduled maintenance program for your aircraft.
- Phase inspection – Approved Aircraft Inspection Program (AAIP)
- 100 hr/annual
- Daily (all aircraft)
- When is it standard operating procedure (SOP)?
- Any unscheduled maintenance is not the norm!

You need to know – Ask. If you have a concern, contact the maintenance specialist.

B. Unscheduled Maintenance

Sooner or later you will experience unscheduled maintenance with an aircraft.

- Chip lights (engine, transmission, tail rotor)
- Blade strikes (main and tail rotor)
- Broken plexiglass
- Cut seatbelts
- Door failure
- Radio problems

Items that seem small may come back to haunt you in the form of a claim from the contractor.

C. Procedures for Unscheduled Maintenance

- Notify helibase or project manager when the aircraft becomes unavailable.
- For any unscheduled maintenance, contact DOI/USFS maintenance specialist ASAP.
- Contact maintenance specialist when problem is corrected in order to return aircraft to contract availability.
- File a SAFECOM.
- Notify management when aircraft has been returned to contract availability by maintenance specialist (AMD/FS).
- Complete daily diary.

D. Additional Information

- If away from the home unit/base, contact the local maintenance specialist (AMD/FS) – (Interagency Technical Assistance Directory).
- Chip lights – The company operations manual in the aircraft will indicate if the pilot can put the aircraft back into service.
- A test flight/test run-up may be required for any major component. Maintenance specialist may have additional request depending on component.
- Anything you feel is a safety of flight item needs to be discussed with mechanic, pilot, and/or maintenance specialist.
- Submit SAFECOM for any and all unscheduled maintenance no matter how minor it may appear.

Remember: You are the eyes and ears representing the maintenance specialist.

Your actions, or non-actions, will reflect on you, your crew, and organization.

Educate yourself by asking maintenance questions. Most mechanics are happy to share their knowledge.

E. Conclusion

- If you don't know, call.
- If you see something, ask.
- Talk to your supervisor, peers, or qualified individuals who may be able to assist with sound judgment and advice.
- Go with your gut feeling for what's right and what's wrong.
- Don't move until you have all your questions answered.
- Be proactive instead of reactive.

Helicopter Management, S-372

Unit 8 – Risk Management

OBJECTIVES:

Upon completion of this unit, students will be able to:

1. Identify risk factors to manage risk within acceptable limits.

2. Given a scenario, complete a risk assessment matrix to determine the appropriate management level for a Go-No-Go decision.

I. RISK MANAGEMENT AND RISK ASSESSMENT

The terms “risk management” and “risk assessment” are often use synonymously, when in fact, they are different.

A. Risk Management

Risk management enables personnel at all levels to do exactly what the term implies—manage risks.

The term is best applied generically, as individuals are confronted by training risks, fiscal risks, and safety risks.

Safety risk management, however, is a specific type of risk management. This section examines safety risk management as it applies to helicopter and helibase operations.

Alternative methods, such as performance of the mission by ground, should always be considered. In accordance with FARs, the pilot always retains final authority for the operation when safety of the aircraft and occupants is a factor.

Hazards might not be limited to the performance of the flight, but may include hazards to personnel if the flight is not performed.

Risk management is a five-step cyclic process that is easily integrated into the decisionmaking process at all levels.

1. Degree of risk

Any flight mission has a degree of risk which varies from 0% risk (no flight activity is conducted) to 100% (aircraft and/or personnel experience a mishap).

Risk Continuum

0% |----------→----------→----------→| 100%
(no flight activity) (accident occurs)

2. Levels of risk management

The risk management process may need to be altered to meet constraints imposed by time, equipment, or operational needs.

These are:

- Time critical

  An “on the run” mental or verbal review of the situation using the basic risk management process without recording information.

- Deliberate

  Addresses the planning for operations conducted on a daily level, where there is an opportunity to address hazards before beginning the actual mission.

  This level may be more likely to use some form of documentation.

- Strategic

  The process that deals in long-range planning for complex missions or development and review.

B. Risk Assessment

Risk assessment is part of the risk management process and can range from simple to complex.

Assessing risk causes personnel to identify hazards, analyze the degree of risk associated with each, and place hazards in perspective relative to the mission or task at hand.

One can then arrive at a decision of whether or not to perform a flight mission. Any risk management decision is a subjective process.

Risk assessment should be conducted by individuals best qualified by training and experience to evaluate a proposed flight or operation, such as:

- Helicopter or project flight manager
- Helibase/airbase manager
- Dispatcher
- Unit aviation manager
- Line manager
- Pilot

Ultimately, it is the pilot who has the authority to decline missions considered to be excessively hazardous.

Risk management decisions are always the prerogative of line management. The risk assessment process assures that these are informed decisions.

Logically, one cannot identify the risk without first determining what the hazards are.

II. FIVE STEPS TO RISK MANAGEMENT

- Identification of Hazards
- Assessment of Hazards
- Make a Risk Decision
- Implementing Controls
- Supervision

A. Step One – Identification of Hazards

The hazards are the potential sources of danger that could be encountered while performing a task or mission.

1. Factors that determine hazards:

    - Weather
    - Time of flight
    - Terrain
    - Equipment
    - Training and proficiency level of personnel

    After researching over 75,000 industrial accidents, William Herbert Heinrich concluded that for every accident, there was an average of 300 “events” or “hazards” that could have forewarned people of the accident.

2. What is a hazard?

    Any real or potential condition that can cause:

    - Mission degradation
    - Injury, illness, or death to personnel
    - Damage to or loss of equipment or property

    There could be other less obvious hazards that would become apparent during planning.

    The helicopter manager, the pilot, other participants in the flight, and, if assigned, the helibase manager should all seek to identify potential hazards before the operation.

3. The 4 M's risk factors

Risk factors can generally be divided into four categories:

- Man (generic)
- Machine
- Medium (environment)
- Method

Risk can be reduced significantly by examining each of these elements.

Requirements can then be met (for example, pilot/aircraft carding) or hazards can be mitigated (for example, high-level reconnaissance prior to descent to low-level).

a. Man

- Crew experience
  - Flight experience and proficiency
  - Knowledge
- Crew composition
  - Knowledge of each other
  - Cohesiveness
  - Changes to the crew
- Fitness for flight
  - Physical state
  - Mental state
- Attitudes and behavior
  - Contribute to high risk
  - Friendliness towards contractor

b. Machine

- Capabilities and limitations
- Certification
- Reliability
- Support
- Special equipment

c. Medium

- Climatic environment
- Operational environment
- Hygienic environment
- Supervision
- Cultural norms
  - National
  - Organizational
  - Professional

d. Method

- Mission objectives
- Alternatives
- Time requirements
  - Information availability and accuracy
  - Planning
  - Accomplishment
- Complexity of the task
- Standards, procedures, and controls
- Resources available

B. Step Two – Assessment of Hazards

Each hazard is analyzed to determine: 1) the effect on personnel and equipment if the hazard is encountered, and 2) the probability the hazard will be encountered.

1. Effect: If the hazard is encountered during a flight mission or aviation operation, the effect may be:

    - Catastrophic: Death or serious injury; system/equipment loss (aircraft or ground accident).

    - Critical: Serious injury; damage to equipment.

    - Moderate: Mission can be accomplished, though there may be adverse effects on mission efficiency (extra cost, delays, etc.)

    - Negligible: No effect on mission accomplishment.

2. Probability: The probability of encountering the hazard during the flight mission or operation may be:

    - Frequent: May be continuously or often encountered during each mission.

    - Likely: May be encountered several times during the course of many missions.

    - Occasional: May be encountered sporadically during the course of many missions.

    - Seldom: May be encountered infrequently, but chances are remote.

    - Unlikely: May be encountered only rarely; chances are possible, but improbable.

3. Risk levels: This step concludes with a risk assessment that describes the risk associated with each of the hazards individually, then the risk associated with the combined hazards.

   The result is a quantification of the risk associated with the operation: Extremely High, High, Medium, or Low.

   - **Extremely High:** Risk is so high that it is probable the mission cannot be accomplished without an accident, loss of life, or serious injury. Hazards cannot be mitigated effectively.

   - **High:** Risk is high enough that there is uncertainty as to whether the mission can be accomplished without an accident, loss of life, or serious injury. Hazards may or may not be able to be mitigated.

   - **Medium:** Degree of risk is such that it is fairly certain the mission can be accomplished safely. Hazards exist, but can be mitigated.

   - **Low:** Little or no impact on mission accomplishment. Hazards are those normally associated with flight (possibility of bird strike, mechanical malfunction, etc.).

   Exercising judgment on how to eliminate or reduce hazards to lessen the overall risk is inherent in the risk assessment process.

4. How do you determine the hazard?

   - Determine the severity, probability and exposure with EACH hazard.

   - Determine the risk associated with the COMBINED hazards.

   An initial assessment may indicate that the risk level is unacceptable (extremely high or high). Once controls are implemented, the risk level may drop to a more acceptable level (medium or low).

C. Step Three – Making a Risk Decision

Personnel are expected to weigh the risk against the benefits of performing an operation.

Be aware that the mentality, even during non-emergency operations, may be mission-oriented (get-the-job-done).

This attitude on the part of government representatives may encourage some pilots to take on unnecessary risks in order to satisfy the customer (the government). It is to be avoided at all costs.

A thorough review of the generic elements of a risk analysis in the 4M's chart (when applied to the risk assessment matrix chart and coupled with the completion of the more specific checklists discussed elsewhere) will determine if the mission can be conducted safely, if it must be delayed or modified, or if it cannot be accomplished with a reasonable degree of safety assurance.

During mission planning, risk decisions should be made at a level of command that corresponds to the degree of risk. The pilot or helicopter manager will have the authority to decline the mission in question.

The helicopter manager, with concurrence from the pilot, will have final decision to proceed with the mission. Thus, guidance should be established as to who makes which risk decisions.

For example, high-risk decisions where the safety of the aircraft must be weighed against the potential for exposure of unprotected crews to severe weather, must be balanced.

Such a high-risk decision should be elevated through the chain-of-command to the highest level of decisionmaking responsibility (for example, to the operations section chief for fire or to the line manager for project missions).

Medium-risk decisions should be elevated to a lower level (for example, to the air operations branch director or project aviation manager level).

Low-risk decisions can usually be made at the helibase manager or helicopter manager level. Refer to the risk assessment matrix chart for guidance.

- Risk decision tips:
  - Involve operational personnel, especially those likely to be directly impacted by the risk decision.
  - Apply redundant risk controls when practical and cost effective.
  - Make risk decisions when the benefit outweighs the cost.

Risk Assessment Exercise: Scenario 1 is on page 8.29 in your Student Workbook (Scenario 2 is on page 8.30). We will complete the risk assessment process using the 4 M's chart (IHOG chapter 3, chart 3-1) and the risk assessment matrix (IHOG chapter 3, chart 3-2) to decide whether to fly the mission.

Remember:

- Assessment is factor of probability and severity.
- Exposure is a factor normally associated with probability.

D. Step Four – Implementing Controls

Included in this step is supervisory action to reduce or eliminate hazards.

Controls may be as substantial as writing a special-use plan or as simple as conducting a short safety briefing.

Once the controls are implemented, the manager should reassess the individual and combined hazards to ensure that risks have been mitigated to fall with an acceptable level of safety.

1. Incorporate selected controls into:

    - Standard Operating Procedures
    - Project Aviation Safety Plans (PASP)
    - Briefings – who will do what when?
    - Training
    - Communicate controls to the lowest level

2. What are controls?

    - Engineering
    - Distance
    - Restrict/limit
    - Guard/control
    - Time
    - Training/education

3. Although many steps can be taken to reduce risk during the flight planning process, the following measures must be taken while in-flight to reduce the risk.

   - Look for hazards and alert the pilot.
   - Stay above 500 feet AGL whenever possible.
   - Do not fly during poor visibility (one-half mile minimum visibility).
   - Perform a high-level reconnaissance before descending below 500 feet AGL.

E. Step Five – Supervision

In this step, supervision goes beyond ensuring that people do what is expected of them.

It includes follow-up during and after a mission to ensure all went according to plan, reevaluating the plan, or making adjustments as required to accommodate unforeseen issues, and incorporating lessons learned for future use.

Nightly debriefings at the helibase are a good example of this additional supervision and follow-up.

- Supervision tips:
  - **Brief** – Ensure personnel know what they should do.
  - **Follow up** – People are doing what is expected.
  - **Update** and evaluate the plan continually.
  - **Adjust** or make changes as unforeseen issues arise.
  - **Debrief** after mission is completed.
  - **Incorporate** lessons learned for future use.

III. FOUR PRINCIPLES OF RISK

- Accept no unnecessary risk.
- Make risk decisions at the appropriate level.
- Accept risk when benefits outweigh cost.
- Integrate risk management at all planning levels.

Performing risk assessment is limited by the amount of time available for planning and requires flexibility and judgment by both pilots and air operations supervisors.

Risk assessments can be divided into three categories according to time element:

A. Rapid Risk Assessment

This type of assessment is required when planning time is minimal.

For example, situations involving high-risk hazards associated with not flying (such as crews getting hypothermia if not supplied) as well as with flying.

Search and rescue missions also fall in this category.

Encountering unexpected winds at a helispot is another common occurrence. The pilot must rapidly assess the risk and determine whether to land, attempt to land at another spot farther from the objective, or abort the mission and return to base.

Note that “rapid” does not mean “hasty” or “uninformed.”

B. Deliberate Risk Assessment

This type is used when planning time permits.

It involves systematic risk identification, evaluation, consideration of control options and risk decisionmaking, implementation of controls, and supervision.

Note that all of these may be applied to rapid risk assessment; however, the timeframe in which the rapid examination is performed is extremely compressed by the urgency of the situation.

This type of risk assessment should be performed by:

- Air operations branch director in completing the ICS-220.
- Helibase manager in briefing personnel and discussing intended missions.
- Project personnel when planning a flight mission days or weeks in advance.

For example, if a wild horse and burro specialist knows a census must be performed in a certain area at a specific time of year, there is ample time to identify and evaluate hazards, develop and implement controls, and supervise preparations for the mission.

C. In-Depth Risk Assessment

This type should be used in instances where new technology is being proposed, when risks appear high, and time and resources allow thorough assessment.

Risk assessment at this level requires more sophisticated techniques and professional reviews.

An example would be testing and implementation of a new aerial firing device (for example, helitorch), new external load methods (for example, longlining), or new method of personnel delivery (for example, rappelling).

In this case, handbooks and operating procedures must also be developed or revised.

"Accidents do not occur because people gamble and lose, they occur because people do not believe that the accident that is about to occur is at all possible."

Willem Albert Wagenaar

CHAPTER 1

ATTITUDE—AN OUTLINE FOR SAFETY

INTRODUCTION

The thoughts outlined in this document are not original but extracted from some of the best known aviation writers and psychologists in the industry. Their thoughts and findings have been combined in a format that will be useful to the casual user of aviation resources, as well as the professional pilot who daily must make decisions regarding safety in the demanding and complex operations we call resource aviation. Some of the sources of these combined thoughts will be listed at the end of this commentary.

In today's modern vocabulary the word **"Attitude"** usually strikes a negative cord. When you hear: "He has an **attitude**" it is assumed to be negative. Webster defines **attitude** as: the manner of acting, feeling, or thinking that shows one's disposition, opinion, etc.; as a threatening attitude, an attitude of entreaty. Today's connotation of attitude is suffering a modern malady known as 'bad press'!

Personality traits and attitudes have a fundamental influence on the way our lives are conducted at home and at work. They determine the way we are judged by others and we often become identified by them. Personality traits are acquired very early in life. They are deep-seated characteristics which are stable and very resistant to change. They may be reflected in aggression, ambition, dominance or creativity and are often situation related. These traits should not be confused with attitudes. The selection of a profession is usually driven by personality traits. How one adapts to that selection is highly influenced by attitudes which are developed and changed through life experiences.

Attitudes describe likes and dislikes. An attitude can be seen as a learned tendency to respond favorably or unfavorably to people, decisions and situations. It is a predisposition to respond in a certain way. An opinion is a verbal expression of an attitude or belief, and is one means by which others may become aware of your "attitude".

It has been established that those involved in most accidents attributable to inadequate human performance probably, at the time of the accident, had the capacity to have performed effectively, yet did not do so. Their personal performance was influenced by factors other than the possession of technical skills. It could have been that the person involved, felt so confident that they could short-cut a standard procedure or avoid consistent use of a checklist—or that **their** interpretation of leadership was dominance—or that in difficult situations they should assume most of the tasks themselves—or that the urgency of the mission justified by-passing established procedures. The pilot and the users of Resource Aviation must combine their skills, knowledge, and experiences to form a positive working machine with a combined and demonstrated **attitude of safety**.

Hazardous Attitudes (example of bad press) and corresponding Antidotes are outlined on the following page.

HAZARDOUS ATTITUDES vs CURATIVE ANTIDOTES

ATTITUDE	ANTIDOTE
ANTI-AUTHORITY "Regulations are for someone else."	"Follow the rules. They are usually right"
IMPULSIVELY "I must act now, there's no time!"	"Not so fast. Think first."
INVULNERABLIITY "It won't happen to me.	"It could happen to me."
MACHO "I'll show you. I can do it."	"Taking chances is foolish."
RESIGNATION "What's the use?"	"I'm not helpless, I can make a difference."

So much for negative attitudes, let's focus on how to embrace **positive** attitudes. While both positive and negative attitudes are considered "highly contagious" we are far more receptive to good vibes than to those that afford us discomfort. We are in a highly specialized, one of a kind environment. Our daily survival depends upon how we respond to situations that are constantly changing. We live on the edge of the next challenge, and our lives are filled with anxieties. We are an entire organization of mission driven personalities complexly interwoven and inter-dependent upon each other for our survival. The decisions we make, and the way in which we make them, have a trickle down effect on everyone assigned to the mission. One of the basic human needs we have is the need to be accepted by our peers. Each of you is important beyond measure. Each is an integral part of the mission and as such, each has a responsibility toward the success and safety of that mission. We must abide by the rules laid down through experience and probability. We must follow procedures which are sometimes boring and repetitive and, if we are to achieve success, we must do it through an attitude and demonstration of safety. Equal to, if not above the "Book Rules", are the rules by which we conduct our daily activities with each other. This daily association when tempered with a **positive attitude** can produce more pro-active aviation safety results than any other effort.

A trendy little book authored by Robert Fulghum is titled: *All I Really Need to Know, I Learned in Kindergarten*. He simplifies our daily efforts with such statements as "Don't throw sand.—share your toys, play fair, say your sorry when you hurt somebody, eat your vegetables, get your rest, enjoy your friends—enjoy your solitude—laugh a lot—continue to listen—continue to learn—" All simple little one liners that outline a positive attitude. It is highly infectious, very effective and most refreshing reading. Fulghum tells us that all the important things in life are attainable, and the first step towards acquiring them is to maintain a **positive attitude.** It has been proven that this positive attitude reflects itself vividly in the safety records of organizations that promote **individual responsibility knit tightly with group concern.** All members function as a team, and each assumes personal responsibility for their own performance. In a helicopter

operation, the pilot and the Helitack personnel function as a single unit. Through **Communication, Motivation, Reinforcement and Example,** each becomes part of the whole and the mission is completed successfully and safely.

Thoughts to consider in any aviation operation:

1. You are now in charge of a sacred trust, the safety of human lives.

2. You must not let undue pressure (expressed or implied) influence your judgment during the performance of this sacred trust.

3. You must be able to develop a team in which members must participate and contribute to the safety of the operation.

4. You must delete "false pride, calculated risk, real world, and good enough for Government work" from your professional vocabulary.

5. You will not be criticized or stigmatized for any decision you make which will ensure added safety to an operation.

6. You must not let your actions instill the attitude of competition between co-workers. This attitude may hinder performance and may compromise the safety of the mission.

If you can view this very serious business to which you are currently dedicating your lives as though each person within the organization is dependent upon the decision **you** make, then you will become the corner stone of the Aviation Safety Program. This is, without question, the greatest contribution you can make towards evoking **an attitude of safety!**

HUMAN FACTORS

Human Factors is about people. It is about people in their working and living environments. It is about their relationship with machines, equipment, procedures, standardization, and the environment in which we live in. Human Factors is also the "bottomless pit" into which 80% of aviation accidents fall. Human Factors is about our lives and how we choose to live them. The concern of this document is to identify, in terms of safety, how this most important condition can be made to work to our benefit. In doing so, we will also be made aware of its snares and warning signals.

There are many factors which may influence a person's overall attitude to the job. These include, amongst others, financial rewards, work colleagues, working environment,and the nature of the task itself. The extent to which these factors apply an influence depend on each person's own preference and values.

Studies done in recent years placed JOB SATISFACTION second only to family. The Forest Service has always viewed its members as family. Further, each discipline within the Forest Service is somewhat clannish and protective of its extended family. Those of us who have chosen to be part of Fire and Aviation live in a "perceived" very small world. We are the only ones there! This is the choice we have made, and once made, we rarely challenge our decision. This is most important work, every aspect, every detail, every decision. There is no margin for error, yet error does happen. It is a fact of life.

For the purpose of this document and its message of Aviation Safety, each reader is to be considered a leader. **Everyone** must assume **leadership** in matters of safety.

CHARACTERISTICS OF A "LEADER" AS RELATED TO SAFETY

There are four important characteristics which a leader appears to possess: motivation, reinforcement, example, and communication.

Motivation

One of the primary tasks is motivating the members of the group. This can be done by emphasizing the objectives of the operation or activity and clarifying the targets or goals which should be achieved. For instance, a helicopter manager, in briefing passengers prior to a flight can make this routine and often rote requirement come alive by pointing out the rewards verses the consequences. Whoever is doing that briefing is at that time, a leader! The passengers can be motivated to want to hear the entire briefing and to abide by the checklist items to the letter.

Reinforcement

A second way leadership can be applied is by modifying habits and behavior by reinforcement. This same crewmember could apply positive reinforcement by making a favorable comment about the passengers conduct at the end of the flight.

Example

The third principle which the leader should apply is the demonstration of the desired goals and behaviors by example. Each day those of us in aviation interface with people who are not experienced at being in and around our environment. A good leader should be able to demonstrate by example the optimum behavior and precautions necessary to outsiders and those unfamiliar with aircraft operations. A common aspect of behavior in which influence by example of a leader is effective, is in connection with uniform or clothing standards and demeanor. If someone on the flight crew is without the proper clothing, it must be expected that others will follow the demonstrated behavior if the problem is not corrected at once.

Communication

The fourth and probably the most important quality is communication. One must be willing and able to communicate and do it at all levels.

While safety is everyone's business and as such, becomes everyone's responsibility, the point of emphasizing these four principles to you is that pilots are placed in a natural leadership role as aircraft commanders. Understanding this, you are in a unique position to influence the behavior of others. Finally, human factors are as varied as the individuals being affected by them, we try to minimize the effects by establishing guidelines compatible with the mission. The goal of all Aviation Accident Prevention Programs is an axiom.

Goal: To reduce Aviation Accident occurrences.

Purpose: To preserve human and material resources through identification and prevention of hazards. Hazards are defined as the causes of damage and injury.

Objective: To minimize human exposure to hazards and implement effective management techniques.

Chart 3-2: Risk Assessment Matrix			HAZARD PROBABILITY				
			Frequent	Likely	Occasional	Seldom	Unlikely
			A	B	C	D	E
EFFECT	Catastrophic	I	Extremely High				Medium
	Critical	II		High		Medium	
	Moderate	III	High	Medium			
	Negligible	IV	Medium		Low		

RISK ASSESSMENT WORKSHEET

Assess the risks involved with the proposed operation. Use additional sheets if necessary.

Assignment:	Date:

Describe Hazard:	Probability (A-E)	Effect (I-IV)	Risk Level
1.			
2.			
3.			
4.			
5.			
6.			
Mitigation Controls:	Probability (A-E)	Effect (I-IV)	Risk Level
1.			
2.			
3.			
4.			
5.			
6.			

Operation Approved by:	Title:	Date:

Risk Assessment Exercise

Scenario 1: You will be taking a recon this evening. Your flight will be in a single engine helicopter and the estimated time of departure is 1830. You wanted to leave earlier, but the helicopter and pilot have been flying for another agency most of the day, and can't get to you until then.

You need to gather your information by tomorrow. You estimate that your flight could take as long as two hours. The flight involves mapping a spot fire with a GPS unit and will require flying at altitudes below 500 feet. When the aircraft lands to pick you up, the pilot (who you have not met) waves to you to board the aircraft.

Concerns:

Scenario 2: You are the helicopter manager for a CWN type 3 helicopter. You have two crewmembers: one has three years of exclusive use experience and is qualified in longline operations and the other is minimally qualified and has no longline experience. The pilot and helicopter are carded for longline operations.

Your module has been ordered to a large incident. On arrival, the helibase manager briefs you and the pilot. The fire is active and all aircraft are committed. There is a priority for several longline missions. The helibase manager requests that your module accomplish these tasks. Your fuel tender is one hour out and the longline is on the fuel truck. You have radio contact with the truck and his position is known. How might you accomplish your tasks?

Your first longline load goes out. When the helicopter returns, the pilot informs you that he is not comfortable flying the longline missions at this time. One of your crewmembers hears part of the conversation and begins telling the pilot of his experience with other pilots and that it should be easy to finish the job. At the same time, the helibase manager contacts you and says he needs the rest of the loads out **now!** How do you analyze this situation?

Concerns:

UNIT QUIZ

1. What is risk management?

   a. A continuous systematic process of identifying and controlling risk.

   b. A five-step cyclic process integrated into the decisionmaking process.

   c. Detects hazards by assessing and implanting a mission plan.

   d. Any risk that cannot be controlled.

2. The risk assessment process is?

   a. Identifying hazards, analyze the degree of risk, and place hazards in perspective relative to the mission at hand.

   b. Part of the risk management process.

   c. Determining which hazards pose the most risk for a planned task or mission.

   d. The same as the risk management process but focuses on the mission objective.

3. The risk assessment process should be completed by?

   a. The unit aviation manager and line officer.
   b. The helicopter or project flight manager.
   c. Individuals best qualified by training and experience.
   d. All the above.

4. What factors are use to determine hazards?

    a. Time, temperature, wind direction, relative humidity, and dew point.

    b. Personnel, mission, resources, and type of aircraft.

    c. Weather, time of flight, terrain, equipment, training and proficiency level of personnel.

    d. Mission objective, crew attitude, pilots flight time, and time of day.

5. How are the 4 M's risk factors used to implement risk management?

    a. By identifying the mission, mishaps, monitor, and management effects of each hazards of risk.

    b. By the interaction between man, media, mission and management that reduces risk.

    c. By examining the elements of man, machine, medium and method, risk can be reduced significantly.

    d. By an operation plan that focuses on man, militia, mishaps and management that affect the go-no-go decision.

6. What level of risk management is most often used daily to address hazards before the actual mission?

    a. Strategic
    b. Generic
    c. Deliberate
    d. Time Critical

7. What are the different risk levels?

   a. Effect, Catastrophic, Critical, and Negligible
   b. Frequent, Likely, Occasional, and Unlikely
   c. Extremely High, High, Medium, and Low
   d. All the above

8. What are the five steps of risk management in correct order:

   a. 1) Assess hazards
      2) Identification of hazards
      3) Analyze controls
      4) Implement risk controls
      5) Analyze risk control measures

   b. 1) Identify man-made hazards
      2) Assess machines
      3) Analyze media controls
      4) Get management approval
      5) Supervise

   c. 1) Identification of hazards
      2) Assessment of hazards
      3) Make a risk decision
      4) Implementing controls
      5) Supervision

   d. 1) Identify hazards
      2) Assess hazards
      3) Make control decisions
      4) Implement risk controls
      5) Analyze supervision

9. What are the four principles of risk?

   a. 1. Develop and execute a mission plan
      2. Eliminate all risk from know hazards
      3. Evaluate the overall mission outcome
      4. Complete by having a closing briefing

   b. 1. Accept no unnecessary risk
      2. Make risk decisions at the appropriate level
      3. Accept risk when benefits outweigh cost
      4. Integrate risk management at all planning levels

   c. 1. Make sure hazards are mitigated
      2. Inform all crew members of the mitigations
      3. Keep management informed of the hazards encountered
      4. Follow-up with lessons learn issues

   d. 1. Complete a risk analysis
      2. Mitigate any known risk of the mission
      3. Accept the mission only after a risk assessment has been completed
      4. Review all risk mitigation for effectiveness

10. The probability of encountering a hazard during the flight mission or operation may be:

    a. Frequent
    b. Likely
    c. Occasional
    d. Seldom to Unlikely
    e. All the above

Helicopter Management, S-372

Unit 9 – Operations

OBJECTIVES:

Upon completion of this unit, students will be able to:

1. Identify relevant information to conduct a mission briefing with module and pilot.

2. Given a specific mission, determine mission requirements and agency required equipment necessary to perform safe, effective, and efficient helicopter operations.

I. DUTIES AND RESPONSIBILITIES

Duties and responsibilities regarding administrative requirements were addressed in previous units. This unit discusses operational responsibilities.

Operational duties as a helicopter manager require flexibility. Numerous people want you to accomplish something and they always want it done right now.

It may seem like you are being pulled in many directions at the same time. Be willing to accommodate changing priorities to meet the needs of the user. Delegate tasks to help you in the long run.

A. Planning

1. A successful operation begins with a thorough plan and is required by agency/bureau policies.

    - Project Aviation Safety Plan (PASP)
    - Special Mission Operations Plan
    - Incident Action Plan (IAP)

2. Value of aviation safety plans:

    - Standard procedures, so everyone involved knows what is required.

    - Enables others to fill in efficiently when aviation positions are vacant.

    - Important orientation tool for new people.

    - Increases safety by outlining the proper way to accomplish objectives.

    - Requires line officer approval.

B. Briefings

1. Initial briefing

Upon arrival on the incident/project:

- Receive a briefing on what type of mission you need to accomplish.
- Obtain copy of IAP or PASP.
- What are the objectives of the mission?
- What is the status of the project/ incident? Will you be there for one day or 14 days?
- What is current and predicted weather (evening thunderstorms, red flag days, etc.)?
- Are there safety issues you need to be aware of (military training routes, ridgelines with downdrafts, powerlines, towers, etc.)?
- Obtain a current flight hazard map.
- How can you and your module assist in the management or operations of the base?
- Radio frequencies to be used.
- Obtain maps of the area.
- Account and billing information.

2. Module briefing

   Once you receive your initial briefing, you need to brief your module.

   Remember, your module includes the helicopter crew persons, the pilot, fuel service vehicle driver, and mechanic.

   They all need to be informed with the same information you have received.

   - Mission assignments
   - Objectives
   - Incident status
   - Weather
   - Safety issues

3. Debriefing

   - Feedback from pilot
   - Communications
   - Mission successes/problems
   - Hazards identified
   - Briefing on next operational period

4. Module capabilities and limitations

   - Qualifications

   - Experience

   - Special skills

     – EMT?
     – IC?

   - Special needs?

II. MISSION READINESS

After you complete the briefings with the module, prepare for your assigned missions. During your initial briefing, you should have received or written down any scheduled or anticipated mission assignments.

A. Aircraft

Ensure the aircraft is configured and ready to accomplish the mission. Contractual and agreement requirements require the pilot to have a:

1. Fire shelter:

   - The pilot must be briefed in the proper use of the fire shelter.

2. Personal Floatation Device (PFD):

   - The contract/agreement requires the pilot to wear a PFD during dipping operations.

   - Reference the contract to see what conditions require a PFD.

B. Crew

Make assignments to your crew so they understand what you require them to do.

C. Equipment

Have all the necessary and required equipment to perform the mission within agency requirements:

- Support kit
- Radios
- Crash and rescue kits

Pre-weigh items as much as possible.

D. Reconnaissance

When completing reconnaissance missions, be aware of the following issues:

- PPE:
  - Do you have enough to supply someone who shows up without it?
  - Who is exempt from wearing PPE, etc.?
- What kind of equipment is being transported on this recon (IR equipment, hazardous materials, etc.)?
- Is the appropriate aircraft being used for the mission?
  - For example, two people are flying on this recon. Why use a medium aircraft if a light is available?
- Are the passengers necessary for the mission or are you exposing individuals to an unnecessary risk?
  - It is your responsibility to question this and make it known if they are unnecessary passengers.
  - A higher authority may overrule you, but if you voice your concerns then someone else accepts the responsibility.
- Have you and the pilot been briefed on the mission profile? Is it appropriate or is there a better way of accomplishing the mission?
- Are there any scheduling problems that need to be dealt with to complete the mission at the desired time?

- Do you have proper communications for the mission?
  - If different radio contacts have to be made, are these frequencies programmed into the aircraft radio?
  - Who are the contacts and where are they located, etc.?
- PLAN the mission, then BRIEF the mission with all individuals concerned, and then FLY the mission.
- What are your agency requirements for the use of the co-pilot position in aircraft with dual controls (medium helicopters)?

E. Initial Attack/Response

Although initial attack is a fire term, it can be viewed as the first response whether it is fire, search and rescue, or any other mission where you must be ready to respond on short notice.

You may be asked to perform initial attack missions that present additional considerations:

- PPE
- Mission briefings
- Mission preparedness – When preparing for the mission, do pre-manifesting:
  - Have appropriate equipment (tools, fireline gear)
  - Nomex clothing (not flight suits for fireline construction, etc.)
- Who is in charge
- Communications
- Aircraft assigned
- Appropriate maps, etc.
- Hazards

III. TRANSPORT

A. Passenger Transport

- PPE
- Mission profile
- Briefing
- Passenger cargo
- Staging
- Hazardous materials
- Necessary equipment
- Loading
- Unloading

B. Cargo Transport

No matter what the project/incident is, you have to deal with transportation of cargo issues:

- PPE
- Briefings
- Appropriate equipment such as longline, swivels, nets, tape, scales, etc. (any special equipment necessary to complete the mission)
- Rigging techniques (are there special techniques that require special training?)
- Aircraft capability
- Hazardous materials issues (transporting fuel with food, explosives, etc.)

Think backhaul; think of hauling trash or personnel back to the base of operations instead of deadheading back.

Plan ahead and modify your plan if loads don't fly safely.

IV. WATER DROPPING OPERATIONS

A. Briefing

During water dropping operations, ensure:

- Pilot has been thoroughly briefed on the mission.
- Any hazards associated with the dip site and drop site are addressed.
- Bucket capacity does not exceed the allowable payload documented on the load calculation.

B. Operational Checks

Prior to departing the base of operations, ensure:

- All operational checks are complete.
- The bucket and electrical systems are functioning properly.
- The length of lines and bucket are in compliance with the procurement document.

C. Dip Site Monitor

If possible, it is recommended that a dip monitor be located at the dip site.

There have been a number of accidents during a dip cycle. The dip site monitor can assist the pilot and request additional help if needed (don’t forget to pick up the people at end of shift).

Some geographical areas require a dip monitor; be prepared if the geographical area you are in requires one.

D. Communications

Verify and provide the pilot with proper frequencies and points of contact they will be working with.

Ensure the dip site monitor has the proper air to ground frequency, and an additional frequency and point of contact in the event of an emergency at the dip site.

E. Environmental Concerns

Many areas around the country have restrictions on using any type of chemicals in and around lakes and streams.

You must have approval to use foam or any other retardant chemicals in these areas.

F. Heli-Mopping

Should be discouraged. The pilot is placed in an environment where risk is very high and effectiveness and efficiency is very low.

G. Performance

We need to monitor the performance of aircraft, pilots, crew people and fuel service personnel.

Pay specific attention to their effectiveness and watch for fatigue.

Provide adequate rest for the pilot during continuous external load missions.

V. MEDEVAC

Regardless of the operation, plan for medical evacuation in the event of an accident. Although you may only be working with one aircraft, be sure to address the following.

A. Plan

- Do you have an aircraft crash, search and rescue plan?
- Is it current and up to date?

B. PPE

Provide PPE to non-agency personnel such as:

- EMTs
- Victims
- Other medical personnel

C. Aircraft Management vs. Mission Accomplishment

- Don't get mission oriented; the EMTs and medical personnel are responsible for that.
- Your mission is to manage the aircraft and risk so that others do not become victims.

D. Appropriate Aircraft

Numerous aircraft are used in resource management.

If multiple helicopters are available (or one designed for medevac operations), consider using one as the primary platform in an emergency situation.

At times you will not have this luxury. As soon as you know your aircraft is assigned as the primary medevac helicopter, consider:

- Mission briefings
- Equipment briefings – How will the equipment in the aircraft be secured? All medical equipment must be secured inside the cabin.
- Backup aircraft – If your aircraft is committed to some other mission, who is the backup and are they briefed?
- Medical personnel – Have all medical personnel been briefed on the roles and responsibilities of crew and about the aircraft safety procedures?

  As soon as you are designated the medevac helicopter, provide medical personnel with a good safety briefing on the primary aircraft and the backup aircraft.

VI. PILOT AND CREW MONITORING EVALUATION

A. Fatigue

This plays a big part in our day-to-day operations, especially during long duration projects. Watch out for indicators of fatigue.

If you sense the pilot or your module personnel are getting fatigued, allow for rest periods.

B. Nutrition

Be sure your pilot and module personnel take time to eat meals and drink plenty of fluids.

C. Stress

Many situations can lead to stress whether necessary or unnecessary. We work in an environment that can be very demanding and at times very stressful. Watch for indicators and allow for breaks.

D. Situational Awareness

Be aware of what is going on in your operations. Pay attention to your module – if they are lax and uninterested, stop and take time to address any concerns you have.

E. Flight and Duty

Manage pilot, mechanic, and crew duty. Duty limitations are in our agreements and contracts and we need to adhere to them.

The agreements and contracts also state that we can stop operations and give the contractor personnel shorter duty days if they seem fatigued. Make sure your crewmembers have plenty of rest between duty days.

F. Limitations

Don't exceed aircraft limitations, whether gross weight limits or wind limits – be more conservative.

Flight Above Ground Level	Flight permitted in winds less than/ Maximum Gust Spread (knots per hour)		
	TYPE 1	TYPE 2	TYPE 3
MORE THAN 500' AGL	50/NA	50/NA	50/NA
LESS THAN 500' AGL	40/15	40/15	30/15

VII. REFUELING OPERATIONS

A. Fueling Areas

Select fueling areas away from other flying traffic, congested areas, traffic areas, and environmentally sensitive areas (lakes, streams, rivers, etc.).

B. Fuel Management

Specific requirements under the agreement/ contract:

1. Eight hour minimum

   The contract/agreement may require that the vendor have 8 hours of fuel per day.

   Ensure there is plenty of fuel for the next duty period. Don't get caught short.

2. Fuel quality control, procedures

   Monitor fueling operations to ensure that proper environmental concerns are being addressed.

   Some areas have strict restrictions regarding fueling operations on agency lands. Know and adhere to these restrictions.

   Do not locate fueling area in or near water sources. Remote fueling situations or government fueling operations may require special considerations and training (refer to IHOG or Fueling Handbook).

3. The fuel service vehicle driver is part of your module and they need to be briefed.

C. Special Operations

1. Aerial ignition

2. Seeding

3. Spraying

4. Law enforcement

5. Search and rescue

6. Animal capture, eradication

7. PPE

   When involved in these operations, ensure PPE requirements are being adhered to.

8. Briefings

   Provide briefings to all individuals involved with the operations.

9. Qualifications and carding

   Persons working in these types of special operations must be trained and approved. The aircraft and pilot also need to be approved for these missions.

10. Appropriate aircraft

    Provide input to ensure the aircraft being used is the appropriate aircraft for the mission (high elevations with high temperatures).

11. Risk management

    It is the responsibility of everyone to mitigate risk. As a manager it is a joint responsibility – you and the pilot are responsible to ensure risk is kept to a minimum.

    Examples:

    - Weather - Don't fly into known weather, stop operations during windy conditions, etc.

    - Firearms - Transport firearms in accordance with the Transportation of Hazardous Materials Guide/ Handbook. If firearms don't need to be loaded, unload them.

    - PFD - When conducting over water missions, follow the requirements as outlined in IHOG and ALSE handbook.

    - Canines - Must be transported in accordance with IHOG.

12. Project Aviation Safety Plan

    If the mission requires a PASP, be sure you have a copy and brief all personnel associated with the mission.

    - Examples of specific PASP:

        – Aerial ignition

        – Seeding or spraying

        – Complex external load operations

        – Any mission not covered by the Unit Aviation Plan

- Examples of special mission operations plan:
  - SAR
  - ACETA
  - Short haul
  - Hoist
  - STEP
  - Law enforcement
  - Military operations

VIII. SAFECOMS

The Aviation Safety Communique (SAFECOM) database fulfills the Aviation Mishap Information System (AMIS) requirements for aviation mishap reporting for DOI agencies and the Forest Service.

Categories of reports include incidents, hazards, maintenance, and airspace.

The system uses the SAFECOM Form AMD-34/FS-5700-14 to report any condition, observation, act, maintenance problem, or circumstance with personnel or the aircraft that has the potential to cause an aviation-related mishap.

The SAFECOM system is **not** intended for initiating punitive actions. Submitting a SAFECOM is **not** a substitute for "on-the-spot" correction(s) to a safety concern. It is a tool used to identify, document, track, and correct safety related issues.

A SAFECOM **does not** replace the requirement for initiating an accident or incident report.

SAFECOMS are an accident prevention tool for everyone associated with aviation operations. Vendors are specifically required by contract to participate.

The following instructions and helpful hints are intended to make the process of submitting a SAFECOM as easy as possible.

If you need assistance, please call the Forest Service at (208) 387-5285 or the Aviation Management Directorate, Aviation Safety at (208) 433-5070.

After the completion and submission of your SAFECOM, your data will be stored in a central database that is shared on an interagency basis. Therefore, you only have to submit one SAFECOM per event.

The **Reported By** section is associated with the person submitting the SAFECOM. All of these fields are optional; however, this contact information is extremely helpful if it becomes necessary to follow-up with the submitter on a particular issue.

This section asks for the name of the person reporting the event, their contact information, and the organization they work for.

SAFECOMS may be submitted anonymously. If you choose to submit your name or any other information in this section, it will not appear on the SAFECOM that is available to the general public.

The **Event** section asks for the "when" and "where" in addition to damage or injuries. Enter the **Date** in the **mm/dd/yyyy** format, and then enter the **Time** using the 24-hour time format **hhmm**.

Note that the date is a required field and both the date and time fields will only accept numeric characters.

Were there any **Injuries**? **Yes** or **No**. If you select Yes, please explain in the narrative. Was there any **Damage**? **Yes** or **No**. If you select **Yes**, please explain in the narrative.

The next three selections identify the Agency, Region or State for USDI and the Unit that had operational control of the mission at the time of the event.

These selections determine which organization(s) will receive initial notification that a SAFECOM has been entered into the database.

From the drop down table select the **Agency**.

From the next drop down table, select the **Region** for USFS or **State** for USDI.

Next, select the **Unit** from the drop down table if it applies.

In the **Location** field, enter the airport, name of the fire, or latitude and longitude.

The final field in this section is the **State**, which applies to the state where the event occurred. Note that the **State** field is a required entry. For example:

Agency:	Bureau of Land Mgt	**Region:**	Alaska State Office	**Unit:**	Not available
Agency:	Forest Service	**Region:**	Region 2	**Unit:**	San Juan NF

The **Mission** section asks for information that describes the mission at the time of the event.

In the **Type** field, use the drop down table to make a selection that best describes the mission that was being performed.

Use the **Other** field if you need to further identify the mission or if nothing is available from the drop down table that actually describes the mission.

In the **Procurement** field, enter how the aircraft you were using was procured from the drop down table.

Use the **Other** field to further identify procurement if necessary.

Under **Persons Onboard**, enter the total number of people on the aircraft, which includes the pilot(s), all flight crew personnel, and passengers.

Was the mission **Special Use**, **Yes** or **No**? Many of our missions are special use. In fact, almost all fire missions are considered special use as well as animal counting, herding, eradication, etc.

Were there **Hazardous Materials** onboard, **Yes** or **No**?

In **Departure Point**, enter where you departed from, for example an airport or helibase.

Under **Destination**, enter the intended destination, which could be an airport, fire name or helispot.

The **Aircraft** section generally applies to the aircraft you are using. However, in the event of an airspace intrusion, conflict or near mid-air, enter as much information as possible about the other aircraft.

If there are multiple aircraft involved, list the other aircraft in the narrative section.

In the **Type** field, enter the aircraft type from the drop down table.

In the **Tail #** field, enter the tail number of the aircraft beginning with **N** for US registered and **C** for Canadian registered aircraft.

Please do not enter the Tanker, Jumper, or Helicopter number unless that is all you have.

In the **Manufacturer** field, select the manufacturer from the drop down table.

In the **Model** field, enter the model number without any spaces or hyphens (for example, 206L3, DC6, PB4Y2).

In the **Owner/Operator** field, enter the name of the agency if the aircraft is an agency fleet aircraft (USFS, USDI, etc.) or the name of the vendor operating the aircraft if it is contracted.

In the **Pilot** field enter the pilot's name, first name then last name.

In the **Narrative** section give a brief description of the event with the facts and outcome of the event. Elaborate on any previous blocks above as necessary.

In the **Corrective Action** section give a brief description of the corrective action that was taken in an effort to prevent the event from reoccurring.

Remember, submitting a SAFECOM is not a substitute for resolving the problem and taking on the spot corrective action.

SAFECOMS often get the attention of senior management. However, minor or repetitive issues may only be used for tracking and trending purposes and generating **Safety Alerts** for prevention purposes.

Press the **Review** SAFECOM button.

From the Review page, follow the directions at the top of the page to change, print, and finally to **Submit** your SAFECOM.

While you may choose to file a SAFECOM anonymously, under normal circumstances the SAFECOM should be routed through the local unit aviation officer or faxed to Aviation Management Directorate, Aviation Safety at (208) 433-5007 or USFS at (208) 387-5735, ATTN: SAFETY (can also be entered online at www.safecom.gov).

Contact AMD at (208)433-5070 or USFS at (208)387-5285 to report problems with the SAFECOM database.

Debriefing Exercise: Read the following scenario and prepare a response. The scenario has enough information for you to make common sense decisions on how to best handle the incident. Be prepared to present your solutions to the class.

Scenario: This scenario involves a major earthquake that takes place in the San Francisco Bay area. There are numerous structural and wildland fires burning. Damaged and blocked roads are impeding vehicle access. Aircraft are extensively used to respond to incidents. Your helicopter and module have been assigned to respond to a wildland fire. Upon arriving at the fire you observe an overturned tank truck with leaking material and a two-acre fire off the roadway. Two people are observed at the site and appear to be injured. The IC for your fire (along with other responding ground units) is several miles from the site and cannot reach the area due to trees blocking the road. The IC requests that you take suppression action on the fire.

IX. COMMUNICATIONS

A. Fire Traffic Area (FTA)

For fire helicopter responding to incident, be aware of FTA requirements.

The FTA was developed by aerial firefighting personnel to provide a standardized initial attack airspace structure to enhance air traffic separation for all aircraft over wildland fire (or other) incidents.

Although the FTA was designed for wildland firefighting incidents, the structure and communications requirements are patterned after Class D airspace with some specific differences.

Communicate clearance, if you cannot comply, land or go home.

1. Communicate

- Initial radio contact should be initiated by 12nm from the fire in order to receive a clearance into the FTA prior to 7nm.

- Monitoring the air tactical frequency while en route helps determine the appropriate time to establish radio contact with the controlling aircraft.

- Establishing communications earlier rather than later often improves efficiency over the fire. Remember, a clearance is required to enter the FTA.

- Initial radio contact information should include:

  – Your call sign
  – Distance
  – Direction
  – time from the fire

- After receiving a clearance into the FTA, pilots should plan to arrive at 7nm from the fire at their assigned altitude and at 150 Knots Indicated Air Speed (KIAS) (or less when applicable).

- Large air tankers may need to operate at higher airspeeds. Captains of such aircraft shall advise the controlling aircraft of entry speeds exceeding 150 KIAS.

- If radio contact cannot be established, pilots should maintain VFR, hold on the 7nm arc from the fire, with left turn orbits around the fire.

2. Profile

   The air tactical group supervisor (ATGS) platform will maintain 1000 feet vertical separation above the air tanker orbit altitude.

   The normal ATGS direction of orbit is right turns around the fire.

3. Helicopters

   Fly assigned altitudes and routes.

4. Three C's

   - Communications – established.

   - Clearance – received and understood.

   - Comply – comply with the clearance.

     If you cannot comply, remain clear of the FTA until you receive an amended clearance you can comply with.

B. Large Incidents

Large incidents often have airspace requirements and TFRs that exceed the dimensions of the FTA.

In this case, initial points (geographical landmarks) are used in conjunction with transition routes to and from the incident.

No communications – Do not assume that all arriving aircraft have been briefed on the initial points. If they have, they also may not have departed from the closest air tanker base.

Arriving aircraft from other geographic areas may possibly fly over your operations area to reach the initial points or the original initial attack latitude and longitude.

C. Sterile Cockpit

Regardless of the type of airspace you are going into, you must maintain sterile cockpit procedures during approach and departure.

This is not only true for airports, but for all takeoffs and landings – especially where there is other air traffic.

Sterile cockpit procedures:

- Within a 5-mile radius of an airport, communications within the aircraft should not be conducted.

- It is important for the pilot to listen for other air traffic in the landing area, and for other direction from the airport or air traffic controller.

- Unless you need to inform the pilot of other aircraft or hazards, do not distract them from their takeoff or approach within the 5-mile radius.

X. FLIGHT FOLLOWING

It is in your best interest to have someone know your location in the event of an emergency.

A. Communication Requirements

During any special use operation, some agencies are required to check in every 15 minutes.

1. Techniques

   Radio, agency vs. FAA, and visual.

2. For point-to-point and special use missions, do one of the following:

   - File an FAA IFR flight plan.
   - FAA VFR with radio check into the FAA.
   - Flight follow with your agency via radio or satellite.
   - Ensure you have provided for after hours flight following.

B. Aircraft Overdue, Missing or Crashed Procedures

Upon arrival at the project or incident, ask for a copy of the local Aviation Mishap Response Guide.

The guide should have current points of contact in the event of an aircraft accident, and current information on the nearest hospitals.

Operations Exercise

This exercise is a continuation of the Contract and Pay Scenario 1 exercise in Unit 3. Use the AMD 23 and PASP from that exercise along with the scenario below to complete and assemble a final packet of required paperwork as documentation. Calculators are available. Submit your completed documentation in an envelope (with your name on the front).

Scenario:

On May 23, using Aircraft Rental Agreement XX-ARA-XXXX, you are assigned to an AS 350B2, pilot Pat Ross, owned by Sky High Helicopters, P.O. Box xxxx, Coeur D'Alene, Idaho. You are to sling 2,000 lbs. of cabin logs and materials from the "Mile 63" helispot to the remote "Trapper Joe" cabin site on the Little Pend Oreille National Wildlife Refuge.

According to the Project Aviation Safety Plan, you have three helicopter crewmembers to assist you; one of them, Susie Green, is a trainee helicopter manager. Jet-A is available at a nearby airstrip, designator SXQ. The project manager intends to save money by having the helicopter fuel at the airstrip instead of ordering a fuel truck.

The B2 A-Star burns 48 gallons an hour and has a 143 gallon tank. Fuel weight will be figured at 7 lbs. per gallon. Flight rate is $1020 per hour. Standby rate is one-half the flight rate and is free equal to flight time. If the helicopter is kept overnight, there is a 3-hour daily guarantee.

List at least seven items of information you should get to the pilot prior to the day of this mission.

Helicopter N190SH meets you at the airstrip (SXQ) at 0800. The pilot came on duty at 0630. The temperature is 25° C (69° F). Meanwhile, the HECM crew is en route to Mile 63 helispot that you will base this operation out of.

The pilot tells you his Hobbs meter at departure from his base was 452.3 and it now reads 453.1. You will fly with him to Mile 63 and take your 30 lb. pack, 45 lb. remote hook and longline, four 5-lb. swivels, and four woven wire chokers, rated for vertical lifting, weighing 5 lbs. each. The crew is bringing the fire extinguisher, a lead line, and crash-rescue kit.

You will need a load calculation. One is provided by the pilot for this exercise. Review it and, if correct, sign. Include in your packet of documentation.

In Unit 6 you completed a pre-use inspection form (either during the video or during the field exercise). Though the model of helicopter may not have been an AS350 B2, include the inspection sheet in your packet of documentation.

All loads require a manifest. For the purpose of this exercise, two manifests have been completed for you.

List all items you need to attend to before you depart the airport for the helispot.

The pilot fuels the aircraft to 90% (129 gallons). En route to Mile 63, you ask for a Power Assurance Check and record the numbers.

List all items you need to attend to before you begin work out of Mile 63.

You arrive at the Mile 63 helispot with a Hobbs of 453.6. After briefing, two HECM personnel, each with a 30 lb. pack, will be flown to the Trapper Joe cabin site to prepare to receive loads.

Who might you use to supervise the operation at the other end?

What has the fuel burn been since you left SXQ? How does this affect your allowable? For the purpose of this exercise, a manifest has been completed for the above. Check to make sure it is correct; make corrections as necessary.

Upon return from this drop-off, the Hobbs is 453.9.

A load of 5 logs (160 lbs. each) is chokered together. To prevent slippage, a spike is driven into the outer edge of each log above the choker; the opposite ends are ratchet strapped together.

For the purpose of this exercise, a manifest has been completed for the following sling loads of logs. Check to make sure it is correct; make corrections as necessary.

Two loads, each with a 45 lb. longline with remote hook, a 5-lb. choker and a 5-lb. swivel, are flown in when the pilot calls to say he will be shutting down upon arrival at Mile 63 due to a problem with his torque gauge. The time on shutdown is 11:30 a.m. and the Hobbs is at 454.7. The company asks to have the helicopter brought back to SXQ to meet a mechanic to deal with the maintenance problem.

Who must you notify?

Take 15 minutes to bring your paperwork up to date, particularly the AMD-23. What other paperwork would reflect the day's events?

The ship was returned to service by the company's mechanic at 1400, fuels, and arrives back at the helibase at 1500.

What more do you need to return the aircraft to contract availability (which, in this case would mean back in standby status)? At what time is the aircraft considered available for use? The Hobbs reads 456.5.

The temperature is now 30° C at Mile 63, and 22° C at Trapper Joe. With the increase in temperature, what is required?

The pilot provides the necessary paperwork. Review and, if you concur, sign. The pilot has fueled the aircraft to a 90% fuel load (129 gallons). The wind has increased to 15 knots. Two more sets of logs are flown in. Suddenly, a radio message from Trapper Joe indicates a crewmember (Todd Fod) has been injured and needs to be flown back to your location. It is 1600. The helicopter flies out empty and the individual is flown back to SXQ, where the helicopter shuts down, a coworker meets him to drive him into town and the helicopter fuels to 90%.

At 1730 the ship flies from SXQ to your location, receives a hook-up, and leaves for the cabin site with two 35 lb. nets (one 400 lbs. cargo, one 250 lbs. cargo, two 5-lb. swivels, and a 5-lb. lead line) along with an internal load of 45 lbs. of tools and 150 lbs. of concrete blocks. Complete a manifest for this load.

The remaining crewmember is retrieved back to Mile 63. The Hobbs now reads 459.2. You will return with the crew in their vehicle. You intend to give him .7 to get back to his home base.

In the course of completing paperwork, you realize that some of your flight time for the injury is included in the Hobbs time for the sling work. What might you do?

The ship is released at 1900. Will he need fuel to fly back to Coeur D'Alene? Will the pilot be off duty within his 14-hour duty day limitation, including ½ hour for post-flight tasks?

Complete all remaining paperwork and file in your documentation packet. Review the contents of your packet with the class.

INTERAGENCY HELICOPTER CALCULATION 5700-17 (11/03)	LOAD OAS-67/FS	MODEL AS350B2
		N# 190SH
PILOT(S)	Patt Ross	DATE 05/23/XX
MISSION	Cabin Sling	

1	DEPARTURE	850	PA	OAT 25C
2	DESTINATION	4800	PA	OAT 17C
3	HELICOPTER EQUIPPED WEIGHT			2990
4	FLIGHT CREW WEIGHT			200
5	FUEL WT (129 gallons X 7 lbs per gal)			903
6	OPERATING WEIGHT (3 + 4 + 5)			4093

		Non-Jettisonable		Jettisonable
		HIGE	HOGE	HOGE- J
7a	PERFORMANCE REF (List page/chart from FM)	SUP 14 p6	Sup 14 p7	Sup 14 p7
7b	COMP GROSS WT (FM **Performance** Section)	4961	5080	5080
8	WT REDUCTION (Req for all Non-Jettisonable)	160	160	
9	ADJUSTED WEIGHT (7b minus 8)	4801	4920	5080
10	GROSS WT LIMIT (FM **Limitations** Section)	4961	4961	5512
11	SELECTED WEIGHT (**Lowest** of 9 or 10)	4801	4920	5080
12	OPERATING WEIGHT (From Line 6)	4093	4093	4093
13	ALLOWABLE PAYLOAD (11 minus 12)	708	827	987

14	PASSENGERS/CARGO MANIFEST	
15	ACTUAL PAYLOAD (Total of all weights listed in Item 14) **Line 15 must not exceed Line 13 for the intended mission.**	

PILOT SIGNATURE Patt Ross	HazMat
MGR SIGNATURE	Yes ___ No X

INTERAGENCY HELICOPTER LOAD CALCULATION OAS-67/FS 5700-17 (11/03)		MODEL AS350B2
		N# 190SH
PILOT(S)	Patt Ross	DATE 05/23/XX
MISSION	Cabin Sling	

1	DEPARTURE	850	PA	OAT 30C
2	DESTINATION	4800	PA	OAT 22C
3	HELICOPTER EQUIPPED WEIGHT			2990
4	FLIGHT CREW WEIGHT			200
5	FUEL WT (129 gallons X 7 lbs per gal)			903
6	OPERATING WEIGHT (3 + 4 + 5)			4093

		Non-Jettisonable		Jettisonable
		HIGE	HOGE	HOGE- J
7a	PERFORMANCE REF (List page/chart from FM)	SUP 14 p6	Sup 14 p7	Sup 14 p7
7b	COMP GROSS WT (FM **Performance** Section)	4961	4900	4900
8	WT REDUCTION (Req for all Non-Jettisonable)	160	160	
9	ADJUSTED WEIGHT (7b minus 8)	4801	4740	4900
10	GROSS WT LIMIT (FM **Limitations** Section)	4961	4961	5512
11	SELECTED WEIGHT (**Lowest** of 9 or 10)	4801	4740	4900
12	OPERATING WEIGHT (From Line 6)	4093	4093	4093
13	ALLOWABLE PAYLOAD (11 minus 12)	708	647	807
14	PASSENGERS/CARGO MANIFEST			
15	ACTUAL PAYLOAD (Total of all weights listed in Item 14) Line 15 must not exceed Line 13 for the intended mission.			

PILOT SIGNATURE Pat Ross	HazMat
MGR SIGNATURE	Yes ___ No X

INTERAGENCY HELICOPTER PASSENGER/CARGO MANIFEST

HELI NO. 190 SH

DATE 5-23-XX

ALLOWABLE PAYLOAD 827 AT 903 LBS FUEL

CURRENT FUEL 735 CURRENT ALLOWABLE 995

#	NAME/CARGO	WEIGHT
	Susie Green	140
	Todd Fod	195
	packs	60
		395

ACTUAL PAYLOAD 395

MANIFEST PREPARER Jonny Doe

OPTIONAL FORM 252 (12/89)
PRESCRIBED BY USDA/USDI

INTERAGENCY HELICOPTER PASSENGER/CARGO MANIFEST

HELI. NO. 190 SH

DATE 5-23-XX

ALLOWABLE PAYLOAD 987 AT 903 LBS FUEL

CURRENT FUEL 634 CURRENT ALLOWABLE 1256

#	NAME/CARGO	WEIGHT
5	Logs @ 1601b EA	800
	Hook & Line	45
	Swivel	5
	Choker	5
		855
	ACTUAL PAYLOAD	855

MANIFEST PREPARER Jonny Doe

OPTIONAL FORM 252 (12/89)
PRESCRIBED BY USDA/USDI

SAFECOM
Aviation Safety Communique'

REPORTED BY (optional)

Name: Jonny Doe
E-Mail:
Phone: 509-260-XXXX
Cell Phone:
Pager:
Organization: Fish & Wildlife Service (FWS)
05/23/XX :Org-Other
Date Submitted: 4/24/2007

EVENT

Date: 05/23/ *mm / dd / yyyy*
Local Time: 1130 *24 hour clock*
Injuries: No
Damage: No
Operational Control:
Location: Little Pend Oreille NWR
Airport, City, Lat/Long, or Fire Name
Agency: Fish & Wildlife Service (FWS)
Region:
State: Washington
Unit:
Refresh Unit Menu

MISSION

Type: External Load (Longline) (Non-Fire)
Other:
Procurement: Rental
Other:
Persons Onboard: 1
Special Use: Yes
Hazardous Materials: No
Departure Point: Mile 63 Helispot
Destination: Remote cabin site

AIRCRAFT

Type: Helicopter
Tail #: N190SH
Manufacturer: Aerospatiale
Model: AS350 B2
Owner/Operator: Sky High helicopter
Pilot: Pat Ross

NARRATIVE (A brief explanation of the event)

1130 Pilot landed with report of torque guage malfunction. Ship flew to SXQ airstrip to meet mechanic for maintenance. maintenance specialist XXXXXXX was notified at 1140. Mechanic returned aircraft to service at 1400. Maintenance inspector approval at 1405. Aircraft back to mile 63 at 1500 hrs. Flew remainder of day, no problems.

CORRECTIVE ACTION (What was done to correct the problem)

Maintenance Inspector XXXXXX notified. Mechanic flown in to repair. Test flights performed, Maintenance inspector approval at 1405.

PAGE 1 OF 1

DATE: 5-23-XX

AIRCRAFT CONTRACT DAILY DIARY

1. CONTRACTOR	2. CONTRACT NO. / ITEM NO.	3. HOME BASE	4. CURRENT LOCATION OF AIRCRAFT
Sky High	XX-ARA-XXXX	CDA	Little Pend Oreille NWR

4. AIRCRAFT NO. AND MAKE/MODEL	5. GOVT. REPRESENTATIVE ON SITE	6. CONTRACTOR REP. ON SITE
N 190SH / AS350 B2	Jonny Doe	Pat Ross

7. PILOT(S) ON DUTY		8. MECHANIC(S) ON DUTY		9. DRIVER ON DUTY	
Pat Ross	(X) REGULAR ( ) RELIEF		( ) REGULAR ( ) RELIEF		( ) REGULAR ( ) RELIEF

10. WEATHER	11. FUEL PRICE	12. OTHER AIRCRAFT ON BASE
Ptly Cldy-wind		

13. STANDBY AVAILABILITY: BEGIN: 0800 END: 1900 TOTAL: 0

14. EXTENDED AVAILABILITY: BEGIN: _____ END: _____ TOTAL: _____

15. SERVICE TRUCK MILEAGE BEGIN: _____ END: _____ TOTAL: _____

16. WORK ORDER ISSUED (Include Suspend/Resume)

17. INCIDENT/HAZARD REPORT(S) ISSUED?
(X) YES (Attach Copy) ( ) NO

18. LIST MATERIALS FURNISHED TO JOB SITE
(Furnished By: G - Govt; C - Contractor; S - Subcontractor)

Item	Hours Used	Furnished By

19. LIST EQUIPMENT ON SITE
(Furnished By: G - Govt; C - Contractor; S - Subcontractor)

Item	Hours Used	Furnished By

20. MAINTENANCE PERFORMED/POWER TREND COMPLETED/ REASONS FOR ANY UNAVAILABILITY:

Power Assurance Check acceptable.
Helicopter unavailable from 1130 am until 1500

21. NARRATIVE REPORT (Include Problems Encountered, Official Visits or Inspections, Etc; Attach Additional Sheets As Necessary):

Pilot on duty 0630. Met helicopter at SxQ at 0800. Flew 3 pax and 1885 lbs cargo. At 1130 aircraft became unavailable due to reported problem with torque guage. Mechanic met helicopter at SxQ, returned to service at 1400. Maintenance Inspector — approved actions taken, at 1405. Helicopter back on site at 1500. Flew 2 more pax, including medivac of injured crewmember. Flew 2745 lbs cargo. Released Ship at 1900 hrs.

22. MISCELLANEOUS COSTS (eg, Rental Cars, Airline Tickets) WHICH WILL BE BILLED TO GOVT. AT A LATER DATE: _____

23. SIGNATURE: Jonny Doe 24. TITLE: Helicopter Manager

DISTRIBUTION: ORIGINAL: PI (DOI) OR COR (FS) YELLOW: CO/ACO PINK: AIR OFFICER - LOCAL (FS) OR STATE/AREA (DOI)