



**US Forest Service
Fire and Aviation Management**

**2016
NATIONAL AVIATION
SAFETY MANAGEMENT
SYSTEM GUIDE**

THIS PAGE INTENTIONALLY LEFT BLANK



Forest Service

Washington Office

201 14th Street, SW
Washington, DC 20250

File Code: 5700

Date: AUG 12 2016

Route To:

Subject: 2016 National Aviation Safety Management System Guide Update

To: Regional Foresters, Station Directors, Area Director, IITF Director, and Deputy Chiefs

The 2016 Forest Service National Aviation Safety Management Systems Guide (NASMSG) bi-annual update is approved.

The 2016 NASMSG documents Fire and Aviation Management (FAM) leaders' intent and describes authority, roles and responsibilities, programs and activities for the application, implementation, and maintenance of Aviation Safety Management System (SMS) in the Forest Service and for its aviation service providers.

All content in the 2016 NASMSG is now effective. This dynamic document is designed to construct and support a sound aviation safety culture that will be updated bi-annually. A copy of this letter will be included in the front of the 2016 NASMSG.

The 2016 NASMSG is available on the FAM website at www.fs.fed.us/fire/aviation/library and on the Forest Service Aviation Safety Center website at www.fs.fed.us/fire/av_safety.

JAMES E. HUBBARD

Deputy Chief for State & Private Forestry

cc: Shawna Legarza, Dan Olsen, Drag Sharp, Arthur W Hinaman, Aimee Mautone, Ezequiel N Parrilla, Demetria Elosiebo, Caleb Berry, Michael Peitz, Paul Linse, Thomas Ricks, John Nelson, Gary Sterling, Jami Anzalone, Dan Zimmerman, Jeff Mai, Margaret Doherty, James McMahon, Kristine Damsgaard, Samuel Ramsay, Jeff Power, Aaron Schoolcraft, Lynne Howard, Robert Madill, Robert Roth, John K Hamilton, Grady Wilson, Douglas Gibbs, Andrew Kingsbury, Yolanda Saldana, Gary Boyd, James Keyes, George N Hough, David L Barto, Regional Fire Directors, Tracy Perry, Frank Sapio



America's Working Forests – Caring Every Day in Every Way

Printed on Recycled Paper



NOTICE

DISCLAIMER. The information contained in this publication is subject to revision in light of changing government requirements and regulations. No PRISM subscriber or other reader should act on the basis of any such information without referring to applicable laws and regulations and/or without taking appropriate professional advice. Although every effort has been made to ensure accuracy, the

ARGUS International, Inc. shall not be held responsible for loss or damage caused by errors, omissions, misprints or misinterpretation of the contents hereof. Furthermore, ARGUS International, Inc. expressly disclaims all and any liability to any person, whether a purchaser of this publication or not, in respect of anything done or omitted, and the consequences of anything done or omitted, by any such person in reliance on the contents of this publication.

The PRISM Safety Management System Manual may only be reproduced, recast, reformatted or transmitted in any form by any means, electronic or mechanical, including photocopying, recording or any information storage and retrieval system, for the expressed use of the PRISM subscriber for whom this manual was written. Any other distribution or use of this manual is expressly forbidden and is a violation of copyright laws.

Major revisions for the ASMS Guide will be accomplished every 2 years through the National Aviation Safety Council and approved by the Deputy Chief, and State and Private Forestry.

[illegible]

THIS PAGE INTENTIONALLY LEFT BLANK

List of Effective Pages

PAGE	DATE	REVISION	PAGE	DATE	REVISION
REVISION CONTROL			CHAPTER 4		
i		Change 3	36		Change 1
ii		Change 2	37		Change 2
LIST OF EFFECTIVE PAGES			38		Change 1
iii		Change 3	39		Change 1
iv		Change 2	40		Change 1
TABLE OF CONTENTS			41		Change 3
v		Change 3	42		Change 1
vi		Change 2	43		Change 1
CHAPTER 1			44		Change 3
1		Original	45		Change 3
2		Change 1	46		Change 1
3		Change 3	47		Change 1
4		Change 1	48		Change 2
5		Change 1	CHAPTER 5		
6		Change 1	49		Change 1
7		Change 3	50		Change 1
8		Change 3	51		Change 1
9		Change 2	52		Change 1
10		Change 1	53		Change 2
CHAPTER 2			54		Change 1
11		Change 3	55		Change 1
12		Change 1	CHAPTER 6		
13		Change 1	56		Change 2
14		Change 1	57		Change 1
15		Change 1	58		Change 1
16		Change 1	59		Change 1
17		Change 3	60		Change 1
18		Change 1	61		Change 1
19		Change 1	62		Change 1
20		Change 2	63		Change 1
21		Change 3	64		Change 1
22		Change 1	65		Change 1
23		Change 1	66		Change 1
24		Change 1	67		Change 1
CHAPTER 3			68		Change 1
25		Change 1	69		Change 1
26		Change 1	70		Change 1
27		Change 1	CHAPTER 7		
28		Change 1	71		Change 3
29		Change 1			
30		Change 1			
31		Change 1			
32		Change 1			
33		Change 1			
34		Change 3			
35		Change 1			

THIS PAGE INTENTIONALLY LEFT BLANK

Table of Contents

Revision Control.....	i
List of Effective Pages	iii
1. Introduction	1
1.1 Background	1
1.2 Scope of the Safety Management System	1
1.3 IS-BAO Certification	3
1.4 Definitions.....	4
2. Safety Management Policy.....	13
2.1 Safety Commitment and Responsibility	13
2.2 Aviation Risk Management Principles	14
2.3 Quality Principles	15
2.4 Aviation Promotion Principles	17
2.5 Safety Planning	18
2.6 Organizational Structure and General Responsibilities	18
2.7 Safety Accountabilities.....	19
2.8 Key Personnel (Safety Organization).....	20
2.9 Emergency Preparedness and Response.....	27
2.10 Documentation	27
3. Safety Risk Management.....	29
3.1 Program-wide Risk Assessment	31
3.2 Management of Change in Terms of Risk.....	32
3.3 Hazard Identification	33
3.4 Hazard Reporting and Management.....	33
3.5 Safety Risk Management Procedures.....	34
4. Safety Assurance.....	43
4.1 Monitoring of Risk and Effected Controls.....	43
4.2 Internal Evaluation Program (IEP) and External Audits.....	44
4.3 Internal Evaluation Corrective Action Requirements	48
4.4 Safety Performance Analysis.....	51
4.5 Classification for Notification and Reporting.....	53
4.6 Categories for Notification and Reporting	54
5. Safety Promotion	55
5.1 Training and Education.....	56
5.2 Aviation Safety Awards Program	61
5.2.2 Aviation Management Award	63
5.3 Safety Communication and Awareness	63

6. Forms.....	65
6.1 SAFECOM AMD-34 / FS 5700-14	65
6.2 Project Aviation Safety Plan (PASP).....	69
6.3 Risk Assessments General Format.....	79
7. Appendices	81
7.1 Appendix 1 – Aircraft Accident Investigation Guide.....	81

INTRODUCTION

1. Introduction

1.1 Background

A Safety Management System (SMS) is essentially a quality management approach to controlling risk. It provides the organizational framework to construct and support a sound safety culture that actively controls its risk exposure. With increased aviation activity and decreased resources, the SMS pushes the limits of current safety strategies and practices by developing and implementing a structured management system to control risk and meet legal responsibilities in aviation operations.

Our goal is to develop a safety culture that achieves and maintains a zero accident rate. A highly successful safety culture understands that every person in the organization accepts that safety is a conscious and ongoing mindset as opposed to simply a box to be checked. We understand that safety is a dynamic non-event. Consequently, we need to maintain the capability to continuously seek out and eliminate latent defects within our systems and culture. By being proactive in this area we eliminate potential causal factors that could lead to future accidents.

1.2 Scope of the Safety Management System

The purpose of this guide is to assist in fulfilling the requirements of FSM 5700 and the National Aviation Safety and Management Plan, with respect to the implementation of Safety Management Systems (SMS). This guide provides best practices for the application of SMS in the Forest Service and for its service providers.

The SMS shall comprehensively examine the functions of the Forest Service and the operational environment to identify hazards and to analyze associated risks. The specific functional components include:

- A. Safety management;
- B. Organization and personnel;
- C. Training and proficiency;
- D. Flight operations;
- E. International operations (when applicable);
- F. Aircraft equipment requirements;
- G. Aircraft maintenance;
- H. Operations policies and procedures;

INTRODUCTION

- I. Emergency accident/incident response;
- J. Environmental management;
- K. Occupational health and safety; and
- L. Security

This document provides guidance for SMS development applicable to all Forest Service aviation operations. Statements containing the words must, shall, and will are directive in nature and the corresponding policy can be found in the FSM 5700. This Guide contains best practices for Safety Management Systems in the aviation program, thus the terms "may" and "should" indicate the best practice or an industry standard that allows some discretion in its execution.

1.2.1 SMS Structure and Organization

There are four components comprising the Agency's safety management system; each component is an essential piece of a comprehensive safety-oriented management system.

- Safety policy;
- Safety risk management;
- Safety assurance; and
- Safety promotion.

1.2.2 References

This Guide is in accordance with the following documents, as revised:

- FSM 5700, Aviation Management Manual;
- FSH 5709.16; Aviation Management Handbook
- FAA Advisory Circular 120 – 92b (or current version);
- ICAO System Management Manual Doc 9859; and
- FSM 6700, Safety and Health Program

INTRODUCTION

1.3 IS-BAO Certification

The Forest Service is working towards the goal of our SMS program achieving the International Standard for Business Aviation Organization (IS-BAO) certification.

The International Business Aviation Council (IBAC) introduced the IS-BAO program in 2002 to foster standardized, safe, and highly professional aircraft operations. IS-BAO is a code of best practices. Agencies implementing IS-BAO may obtain a Certificate of Registration from IBAC, demonstrating compliance to a recognized international standard. Certificates of Registration are issued by IBAC to agencies that demonstrate compliance through successful completion of a third party industry audit by an IBAC Accredited Auditor.

In January 2012 the agency received gold standard certification from GSA the first step in the IS-BAO process. The requirements for gold standard are:

- Adheres to the Federal Management Regulations Part 102-33 (FMR)
- Has an operations manual
- Has a maintenance manual (or its equivalent)
- Has a training program
- Runs a safety program
- Has a survey program
- Has a safety data collection program

The IS-BAO process will continue with audits of representative regions by an accredited IBAC auditor. This will provide the documentation that we are IS-BAO compliant and are in excess of the basic requirements as recognized by all ICAO members. The WO Branch Chief of Aviation Safety is responsible for submitting applications and maintaining the ICAP gold standard for US Forest Service Aviation Safety program.

INTRODUCTION

1.4 Definitions

Note that definitions in this guide are specific to the SMS process and may not read exactly the same as definitions in sections of the FSM 5100, 5700 or 6100/Personnel Management.

Accident – An unplanned event or series of events that results in death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment.

Aircraft Accident. An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and the time all such persons have disembarked, and in which any person suffers death or serious injury or in which the aircraft receives substantial damage. During a jump sequence, a Forest Service smokejumper is considered to have safely disembarked the aircraft after detaching from the static line from the parachute deployment system and when the parachute canopy has successfully deployed. (Refer to 14 CFR NTSB 830 for definition of reportable accidents).

Aircraft – Means a device that is used or intended to be used for flight in the air.

Aviation Coordinated Response Protocol (ACRP) – The (ACRP) portion of the overall Coordinated Response Protocol (CRP) concept is a phased approach to an aviation accident /incident review that establishes pre-determined teams and training for aviation safety investigator practitioners. The Aviation CRP is designed to coordinate with all groups working together, National Transportation Board (NTSB), Learning Review Team, Peer Support/Critical Incident Stress Management, Law Enforcement and Investigations, Union, and Human Resources.

Air Safety Investigator (ASI) – A Federal employee who has education, expertise, and experience in aviation accident, mishap, or near miss investigation; has knowledge of environmental, human, and material factors and analysis in incidents; is tasked to investigate the incident and generate the safety investigation report (SIR). May also serve as a chief investigator (CI).

Analysis – The process of identifying a question or issue to be addressed, modeling the issue, investigating model results, interpreting the results, and possibly making a recommendation. Analysis typically involves using scientific or mathematical methods for evaluation.

Assessment – The process of measuring or judging the value or level of something.

INTRODUCTION

Attributes – System Attributes, or the inherent characteristics of a system, are present in any well-defined organization and apply to an effective SMS.

- Responsibility: Who is accountable for management and overall quality of the process (planning, organizing, directing, controlling) and its ultimate accomplishment.
- Authority: Who can direct, control, or change the process, as well as who can make key decisions such as risk acceptance. This attribute also includes the concept of empowerment.
- Procedures: A specified way to carry out an activity or a process – procedures translates the “what” in goals and objectives into “how” in practical activities (things people do). Procedures are simply documented activities to accomplish processes, e.g., a way to perform a process. The design expectations that are noted as procedures derive directly from the FSM 5709.16 and operational guides.
- Controls: Controls are elements of the system, including hardware, software, special procedures or procedural steps, and supervisory practices designed to keep processes on track to achieve their intended results. Organizational process controls are typically defined in terms of special procedures, supervisory and management practices, and processes.
- Process Measures: Ways to provide feedback to responsible parties that required actions are taking place, required outputs are being produced, and expected outcomes are being achieved. A basic principle of safety assurance is that fundamental processes be measured so that management decisions can be data-driven.
- Interfaces: This aspect includes examining such things as lines of authority between departments, lines of communication between employees, consistency of procedures, and clearly delineating lines of responsibility between organizations, work units, and employees. Interfaces are the “Inputs” and “Outputs” of a process.
- Interfaces in Safety Risk Management and Safety Assurance: Safety Risk Management (SRM) and Safety Assurance (SA) are the key processes of the SMS. They are also highly interactive, especially in the input-output relationships between the activities in the processes.
- Audit: Scheduled, formal reviews and verifications that evaluate whether an organization has complied with policy, standards, and/or contract requirements. An audit starts with the management and operations of the organization and then moves to the organization's activities and products/services.

INTRODUCTION

- **Internal audit:** An audit conducted by, or on behalf of, the organization being audited, e.g., the flight training department audits the flight training department.
- **External audit:** An audit conducted by an entity outside of the organization being audited, e.g., the flight operations division audits the flight training department.

Aviation System – The functional operation or production system used by an organization to produce an aviation product or service (see *System* and *Functional* below).

Best practices – Common industry policies and procedures that result in a high quality of safety and performance.

Complete – Nothing has been omitted and what is stated is essential and appropriate to the level of detail.

Compliance – This includes but is not limited to compliance with Federal regulations. It also includes agency contract requirements, requirements of operator developed risk controls or operator specified policies and procedures.

Conformity – Fulfilling or complying with a requirement [ref. ISO 9001-2000]; this includes but is not limited to complying with Federal regulations. It also includes complying with agency requirements, requirements of operator developed risk controls, or operator policies and procedures.

Continuous monitoring – Uninterrupted (constant) watchfulness (checks, audits, etc.), over a system.

Contractor – A person or agency that is financially procured by the Government to provide goods or services. Also referred to as a **Service Provider**.

Corrective action – Action to eliminate (remove) or mitigate (lessen) the cause or reduce the effects of a detected nonconformity or other undesirable (unwanted) situation.

Correct – Accurate without ambiguity or error in its attributes.

Documentation – Information or meaningful data and its supporting medium (e.g., paper, electronic, etc.). In this context, *documentation* is different from *records* because *documentation* is the written description of policies, processes, procedures, objectives, requirements, authorities, responsibilities, or work instructions; whereas *Records* are the evidence of results achieved or activities performed.

INTRODUCTION

Evaluation – An independent review of agency policies, procedures, and systems [ref. AC 120-59A]. If accomplished by the agency itself, the evaluation should be done by a person or organization in the agency other than the one performing the function being evaluated. An evaluation is an anticipatory process designed to identify and correct potential problems before they happen. An evaluation is synonymous with the term “systems audit.”

Fatal injury – Any injury that results in death within 30 days of the accident.

Functional – The term “function” refers to “what” is expected to be incorporated into each process (e.g., human tasks, software, hardware, procedures, etc.) rather than “how” the function is accomplished by the system. This makes for a more performance-based system and allows for a broad range of techniques to be used to accomplish the performance objectives.

Hazard – Any existing or potential condition that can lead to injury, illness, or death; damage to or loss of a system, equipment, or property; or damage to the environment. A hazard is a condition that might cause (is a prerequisite to) an accident or incident.

Incident – A near-miss episode with minor consequences that could have resulted in greater loss. An unplanned event that could have resulted in an accident or did result in minor damage. An incident indicates that a hazard or hazardous condition exists, though it may not identify what that hazard or hazardous condition is.

- Aircraft Incident. An occurrence, other than an accident, associated with the operation of an aircraft that affects, or could affect, the safety of operations.
- Aircraft Incident with Potential. An "in-flight incident" that narrowly misses being an accident by NTSB definition and circumstances involve some aircraft damage, property damage, or minor injury to crew or passengers.

Investigation – Gathering and interpreting information to help managers understand how and why an accident occurred.

Lessons learned – Knowledge or understanding gained by experience, which may be positive, such as a successful test or mission, or negative, such as a mishap or failure. Lessons learned should be developed from information obtained from inside and outside of the organization and/or industry. Lessons learned may incorporate various processes including AAR (After Action Review) or FLA (Facilitated Learning Analysis).

Likelihood – The estimated probability or frequency, in quantitative or qualitative terms, of an occurrence related to the hazard.

Line management – The management structure that operates (controls, supervises, etc.) the operational activities and processes of the aviation system.

INTRODUCTION

Mishap – A broad term that includes accidents, incidents with potential, and aircraft incidents but does not include hazards.

National Aviation Safety Council (NASC) – Council Comprised of RASM's, FHP Aviation Officer, the Branch Chief, Aviation Safety Management System (BC-ASMS) National Aviation Risk Management Specialist and other non-voting members outlined in the NASC charter. Found at:

http://fsweb.wo.fs.fed.us/fire/fam/aviation/charters/rasm_dm_charter.pdf

Near Midair Collision (NMAC) – An incident associated with the operation of an aircraft in which the possibility of collision occurs as a result of proximity of less than 500 feet to another aircraft, or a report is received from a pilot or flight crewmember stating that a collision hazard existed between two or more aircraft. (ref. FAA Order 7210.56 paragraph 4-1-1).

Nonconformity – Non-fulfillment of a requirement (ref. ISO 9001-2000). This could include but is not limited to, noncompliance with Federal regulations, agency requirements, requirements of operator-developed risk controls or operator-specified policies and procedures.

Objective – The desired state or performance target of a process. Usually it is the final state of a process and contains the results and outputs used to obtain the desired state or performance target.

Operational Control – The exercise of authority over initiating, conducting, or terminating a flight (14 CFR Part 1.1). This includes direct management oversight, supervision and accountability for a specific task, mission or assignment.

Operational life cycle – Period of time from implementation of a product/service until it is no longer in use.

Organization – Indicates both certificated and non-certificated aviation organizations, aviation service providers, air carriers, airlines, maintenance repair organizations, air taxi operators, corporate flight departments, repair stations, and pilot schools.

Outputs – The product or end result of a SMS process, which is able to be recorded, monitored, measured, and analyzed. Outputs are the minimum expectation for the product of each process area and the input for the next process area in succession.

Oversight – A function that ensures that an aviation organization (internal and external) complies with and uses safety-related standards, requirements, regulations, and associated procedures. Safety oversight also ensures that the acceptable level of safety risk is not exceeded in the air operations system.

INTRODUCTION

Pilot Proficiency – Currency and proficiency have similar definitions and they do complement each other, but neither one is a replacement for the other. Being current under the Federal Aviation Regulations means that one has met the requirements to act as a pilot in command of an aircraft within a certain time period. According to Webster's College Dictionary, being proficient means, "fully competent in any art, science, skill, or subject." You can be current without being a proficient pilot, but if you are proficient, most likely you have also met the currency requirements to get to that point. But when it comes to proficiency, being prepared to handle any situation with which you might reasonably be presented.

Preventive action – Preemptive action to eliminate or mitigate the potential cause or reduce the future effects of an identified or anticipated nonconformity or other undesirable situation.

Procedure – A specified way to carry out an activity or a process.

Process – A set of interrelated or interacting activities that transform inputs into outputs.

Process Measures – Refer to definition for Process Measures under the *Attributes* definition, above.

Product/service – Anything that is offered or can be purchased that might satisfy a want or need in the air transportation system.

Qualified Technical Investigator – A Washington Office approved individual having experience in aviation program or safety management, fixed-wing or rotor craft operations, or aircraft maintenance, who may be assigned participation as a member of an accident investigation team.

Quality Assurance – The process of verifying or determining whether products or services meet or exceed customer expectations. Quality management includes planning and checking standards while quality controls are specific standards that mitigate risk.

Records – Evidence of results achieved or activities performed.

Residual safety risk – The safety risk that exists after all controls have been implemented or exhausted and verified. Only verified controls can be used for assessing residual safety risk.

Risk – The composite of predicted severity (how bad) and likelihood (how probable) of the potential effect of a hazard in its worst credible (reasonable or believable) system state. The terms *risk* and *safety risk* are interchangeable.

Risk Control – Steps taken to eliminate (remove) hazards or to mitigate (lessen) their effects by reducing the severity and/or likelihood of risk associated with those hazards.

INTRODUCTION

SAFECOM – The agency Form FS 5700-14, SAFECOM: Aviation Safety Communiqué, is 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 form can be accessed at www.safecom.gov.

Safety Assurance – A formal management process within the SMS that systematically provides confidence that an organization's products/services meet or exceed safety requirements.

Safety culture – The product of individual and group values, attitudes, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, the organization's management of safety. Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventive measures.

Safety Management System (SMS) – The formal, top-down business-like approach to managing safety risk. It includes systematic procedures, practices, and policies for the management of safety (as described in this document it includes safety risk management, safety policy, safety assurance, and safety promotion).

Safety objective¹ – A goal or desirable outcome related to safety. Generally based on the organization's safety policy, and specified for relevant functions and levels in the organization. Safety objectives are typically measurable.

Safety planning² – Part of safety management focused on setting safety objectives and specifying needed operational processes and related resources to fulfill these objectives.

Safety risk – The composite of predicted severity (how bad) and likelihood (how probable) of the potential effect of a hazard in its worst credible (reasonable or believable) system state. The terms *safety risk* and *risk* are interchangeable.

Safety risk control – A characteristic of a system that reduces or mitigates (lessens) the potential undesirable effects of a hazard. Controls may include process design, equipment modification, work procedures, training or protective devices. Safety risk controls must be written in requirements language, measurable, and monitored to ensure effectiveness.

Safety Risk Management (SRM) – A formal process within the SMS that describes the system, identifies the hazards, assesses the risk, analyzes the risk, and controls the risk. The SRM process is embedded in the processes used to provide the product/service; it is not a separate/distinct process.

¹ Adapted from definition 3.2.5 in ISO 9000-2000 for "quality objectives."

² Adapted from definition 3.2.9 in ISO 9000-2000 for "quality planning."

INTRODUCTION

Safety promotion – A combination of safety culture, training, and data sharing activities that support the implementation and operation of an SMS in an organization.

Severity – The degree of loss or harm resulting from a hazard.

Substitute risk – A risk unintentionally created as a consequence of safety risk control(s).

System – An integrated set of constituent elements that are combined in an operational or support environment to accomplish a defined objective. These elements include people, hardware, software, firmware, information, procedures, facilities, services, and other support facets.

System Attributes – Refer to definition for *Attributes*, above.

System Safety – An overarching engineering discipline focused on designing and building fail-safe systems. Safety Management Systems branched from System Safety in order to include operational factors in aviation safety.

Unmanned Aircraft Systems (UAS) – An aircraft used or intended to be used for flight in the air that has no onboard pilot. This includes all classes of airplanes, helicopters, airships and translational lift aircraft with control over 3 axes (FAA Interim Operational Approval Guidance 08-01-Unmanned Aircraft Systems Operations in the U.S. National Airspace System). In addition to the actual aircraft, a UAS also consists of the Ground Control Station. Agency UAS operations will comply with FAA policy and/or regulations applicable to UAS flight operations.

INTRODUCTION

THIS PAGE INTENTIONALLY LEFT BLANK

2. Safety Management Policy

2.1 Safety Commitment and Responsibility

The Forest Service is committed to developing, implementing and continuously improving the aviation operation. Our number one job is to protect our most valuable resource—our employees. Unless we do that, we cannot be a world-class leader in natural resource management. Every line officer, manager, supervisor, and employee has the responsibility to manage risk exposure. That means identifying and abating hazards, refusing to accept unnecessary risk, and making risk-related decisions at the appropriate level.

2.1.1 Chief's Safety Intent

The Chief has provided the field with Leader's intent through various means. Here is an excerpt from the latest letter addressing safety expectations dated April 5, 2016.

For 2016, our expectation is for *all* of us to focus our efforts intently on the decisions we make as agency administrators, commanders, and individual responders. *Implement strategies and tactics that commit responders only to operations where and when they can be successful, and under conditions where important values actually at risk are protected with the least exposure necessary while maintaining relationships with the people we serve.*

This direction requires more work before fire comes. We must help build broad understanding and acceptance that intense fire behavior may mean we can't protect values at risk under all circumstances. We expect that during such periods protecting lives of responders is the objective – we don't expect and we won't allow responders to risk their lives attempting the improbable.

This direction also requires greater focus on identification of unnecessary exposure during incidents. We specifically ask each of you to "*stop, think and talk*" before "*acting*" in any circumstance that feels like it may represent unnecessary exposure - as you do so we'll have your back.

I expect us to be aggressive implementing tactics that are necessary and have a high probability of success: to accept when all we can do is point protection, until the fuels or weather change. I also expect us to be aggressive recognizing when tactics are unnecessary or will have no effect and only increase the exposure of our line responders and pilots.



We have much to learn from your experience and wisdom and invite you to join the conversation. With our fire seasons growing hotter, drier and longer-with more and more homes and structures in the wildland urban interface-the work becomes more hazardous, more challenging. But it is only by working together that we can put *Life First* and ensure that **"everyone goes home safely every day."**

2.2 Aviation Risk Management Principles

Management has defined policy and doctrine in FSM 5700 that conveys aviation safety expectations and objectives to employees. Aviation safety policy in FSM 5700 addresses roles, responsibilities, and authorities regarding aviation safety at each organizational level.



This process starts with a clear value-based philosophy of what the organization and its business model should be and what it is about. The relevance of safety principles to Forest Service doctrine for aviation management cannot be overstated. These principles form the undercurrent that will permeate the business model and drives the SMS program design.

1. **“As an organization our commitment is to manage risk to a level as low as reasonably practical (ALARP).”** This effort is an iterative process that requires diligence in the following principle areas:



- Develop and maintain a safety culture that recognizes the value of safety management systems; 
- Clearly define the duties, responsibilities, and accountabilities for all employees;
- Provide all employees with adequate training and information to enhance performance;
- Comply with or exceed all regulatory and agency specific requirements;
- Proactively manage the risks associated with our operation;
- Standardize risk management as a part of the aviation operations planning process, such that all deliberate/strategic risk assessments generally follow the format found in the Appendix 6.3 of this Guide.
- Ensure externally supplied services and materials meet or exceed all regulatory and agency specific requirements;
- Set defined performance goals and consistently measure performance against those goals;
- Conduct internal management and safety reviews to improve performance; and 
- Encourage all employees to report errors and safety issues in the spirit of a just culture.

2.3 Quality Principles

Top management shall ensure that quality policies and procedures are consistent with the SMS requirements defined in this manual. The SMS quality management (assurance and control) processes shall be consistent with agency to improve the efficiency of the entire organization.


1. **"Create a constancy of purpose"** Replace short-term reaction with long-term planning. This applies to action plans that make adjustments for weaknesses and deficiencies.
 - Avoid reactive fixes to organizational problems.
 - Define the problems of today and the future.
 - Allocate resources for long-term planning and plan for high quality services.
 - Constantly improve design of product and service.
2. **"Adopt a new philosophy."** Meaningful change can only take place from within the organization. **Change focus from operations output to quality service.** 
 - Quality costs less not more.
 - The call for major change comes from the top.
 - Stop waiting for direction from upper management and instead seek direction by evaluating field customer needs.
3. **"Cease dependence on inspection to achieve quality."** Quality does not come from inspection alone. If quality is designed into the process and standards are fully implemented then variation is reduced and there is less need to inspect operations for defects because there won't be any.
 - Inspection should be used to collect data for process control and to provide input to guide management decisions resulting in a reduction in potential errors.
 - Quality cannot be achieved through reactive identification  and elimination of errors because it perpetuates the **fly/crash/fix/fly cycle.**

SAFETY MANAGEMENT POLICY

4. **"Do not award business based on price tag alone."**  Move towards a single supplier for any one service. Multiple suppliers mean greater potential for variation between service providers. Our actions should be focused on the detection of variations between vendor standards to identify the best service provider. The selection of a single vendor providing best value for cost reduces errors and cost, validating the transition to fewer vendors.
- Price alone has no meaning; change focus from lowest cost to best value/cost.
 - Work toward a single source for like types of services.
 - Develop a longer term relationship (contract) between the operation and vendor.
5. **"Improve constantly the system of production and service."** Each new action must constantly strive to reduce variation and introduce mitigations that reduce mishaps and improve effectiveness.
- Quality starts with the intent of management which is found in directives.
 - **Design Quality into the system with a fundamental focus on team work in design.** 
 - Constantly maintain awareness and continue to reduce waste.
 - Constant improvement of the system requires greater efforts than reactively responding to errors and issues.

2.4 Aviation Promotion Principles

Management must be committed to implementation of SMS as their highest priority, to provide safety resources, to continuously improve safety practices, and to provide a framework for responsibility and accountability.

1. **"Institute a program of education and self-improvement."** Personnel need a thorough grounding in the principles, tools and techniques of SMS. People must learn new ways of working together as teams and adopt new behaviors that support the new management philosophy.
 - Educate for higher awareness in management and in customers.
 - Develop team building skills in employees. 
2. **"Break barriers among staff areas."** Another idea central to QA is the concept of the 'internal customer', which in our case may mean that management processes, antiquated policies, budget allocations and hiring restrictions are the barriers to our success. We need to act to correct such inefficiencies.
 - Promote team work to identify internal barriers and satisfy the internal customer.
 - Know your suppliers, customers, as well as your own inefficiencies.
3. **"Adopt and Institute Leadership."** Leadership means designing the system around high standards, building a quality culture, and modeling behavior that exemplifies the values to support such culture.
 - Remove barriers to pride of workmanship, and recognize positive outcomes.
 - Leaders must know the work they manage and supervise.
4. **"Take action to accomplish the transformation."** Everyone in the organization must work together to facilitate change management.
Forest Service Aviation Managers at all levels in the program should:
 - Be proactive within the implementation of the change management process.
 - Take pride in the new doctrine and the QA Program.
 - Include a cross section of people to implement the change from the top to the bottom.

2.5 Safety Planning

This Guide is supplemented by the National Aviation Safety and Management Plan to meet the safety objectives described in the agency safety policy. The information provided here is intended to comprehensively define the SMS, but will require periodic review to ensure continuous improvement is sustained. As such, this Guide shall be reviewed at least annually by the National Aviation Safety Council, Regional Aviation Officers and Washington Office Aviation Branch Chiefs. The NASC has responsibility to ensure the review and approval process is completed.

2.6 Organizational Structure and General Responsibilities

The Director, Fire and Aviation Management (FAM) has the responsibility for agency aviation safety and shall provide resources essential to implement and maintain the SMS. The Director assures that the SMS program is capable of:

- A. Ensuring that processes needed for the SMS are established, implemented and maintained;
- B. Reporting the performance of the SMS to the organization; and
- C. Ensuring the promotion of safety awareness and safety requirements throughout the agency.

2.6.1 All Employees

All Forest Service employees shall be responsible for aviation safety and shall take timely action to promote safety. The following best practices are expected:

- A. Every employee shall identify hazards, assess risk and mitigate risk to the lowest acceptable level.
- B. Every employee shall initiate appropriate action when an unsafe act or condition is observed. Any employee may stop an unsafe operation or may refuse to participate in an aviation operation when conditions indicate that further activity would jeopardize safety.
- C. Every employee shall report to a supervisor, local aviation officer, or line officer any aviation operation that the employee believes is being conducted in a hazardous manner.
- D. Every employee shall use the SAFECOM system to report any condition, observance, act, maintenance problem, or circumstance that has the potential to cause an aviation or aviation-related mishap. It should also be used for reporting positive safety actions and mishap prevention measures.

SAFETY MANAGEMENT POLICY

- E. Every employee shall participate in accident prevention by reading available safety information.
- F. Aviation personnel must be qualified for the positions and functions they are assigned to perform in.

2.7 Safety Accountabilities

The Director, FAM is responsible for the oversight of the Safety Management System, to include setting goals and objectives, and providing the necessary resources in order for the SMS to function effectively. This includes support for and execution of the processes and procedures defined in this guide.

The Assistant Director, Doctrine, Communications and Risk Management (AD-RM) with responsibility for:

- A. Ensuring that processes needed for the SMS are established, implemented and maintained;
- B. Reporting the performance of the SMS to the organization; and
- C. Ensuring the promotion of safety awareness and safety requirements throughout the USFS.

Each aviation manager is required to:

- A. Monitor conditions to ensure that safe operation of agency aircraft;
- B. Actively support the SMS;
- C. Ensure assigned employees are trained and actively participating in the SMS; and
- D. Actively identify and assess the agency's risk exposure.

Managers' safety responsibilities involve the supervision of employees, and the provision of resources for those employees to safely carry out their assigned duties. Managers are responsible for integrating SMS activities into their assigned duties and responsibilities.

Employees are responsible for conducting their duties in accordance with all agency policies, procedures, and government regulations. To strive for the highest level of safety, all employees are encouraged to report errors, incidents, and accidents swiftly and honestly, without fear of reprisal, or being subjected to punishment for legitimate errors. Employees shall manage risk and mitigate it to the lowest acceptable level.

2.8 Key Personnel (Safety Organization)

2.8.1 The Accountable Executive

The accountable executive is the Director, FAM. The Director, FAM has the overall responsibility for safety performance and shall designate resources essential to effectively implement and maintain the SMS.

2.8.2 The Assistant Director, Doctrine, Communications and Risk Management

The Assistant Director, Doctrine, Communications and Risk Management (AD-RM) has the responsibility for oversight of the fire and aviation programs safety performance and shall designate resources essential to effectively implement and maintain the Aviation SMS.

2.8.3 The Assistant Director, Aviation

The Assistant Director, Aviation (AD-A) shall coordinate with the AD-RM and BC-ASMS to ensure that safety policy and procedures are adhered to with all aviation operations.

2.8.4 The Branch Chief, Aviation Operations

The Branch Chief, Aviation Operations (BC-AO) acts with the authority of the Assistant Director, Aviation in all matters regarding Forest Service aviation operations, to include but not limited to operations planning, operational safety, contract compliance audits and reviews, program audits and reviews and operational support to aviation safety. Specific responsibilities of the BC-AO are:

- Develop and maintain program operational plans that include safety and risk management components. Provide these operational plans to the Branch Chief, Aviation SMS for review;
- Facilitate hazard identification and risk management;
- Monitor safety concerns in the aviation industry and their perceived impact on USFS operations;

Monitor employee training programs to ensure that safety, health, And environmental information presented is current and satisfies applicable government rules, and Forest Service Policy.

2.8.5 The Branch Chief, Aviation Safety Management Systems

The Branch Chief, Aviation Safety Management Systems (BC-ASMS) is the working title for the Aviation Risk Management Specialist who works directly for the Assistant Director, Doctrine, Communications and Risk Management. The title BC-ASMS is used throughout this Guide. The BC-ASMS monitors all aspects of the safety system described in this guide, and acts with the authority of the Director, FAM in all matters regarding safety, and as such, can designate any delegated resources to accomplish USFS stated safety goals and objectives. Specific responsibilities of the BC-ASMS are:

- Maintain safety documentation; specifically this guide will be maintained as a controlled document and the requirements listed in section 2.9 will be kept current and in good order;
- Develop safety goals and objectives for the accountable executive's consideration;
- Provide aviation safety leader's intent to the national aviation program in coordination with the AD-RM and the AD-A.
- Develop and implement emergency response planning;
- Monitor SMS performance and create performance reports for other managers and the accountable executive, as directed;
- Facilitate hazard identification and risk management;
- Determine the need for and coordinate development of required safety training materials prescribed by national, state, and local laws and regulations or industry best practices;
- Receive, evaluate, and process all employee hazard reports in accordance with this manual's requirements and recommend action to mitigate risk;
- Coordinate all national aviation safety program activities and act as focal point for SMS between the FS, its contract service providers, as well as applicable governmental agencies;
- Monitor safety concerns in the aviation industry and their perceived impact on USFS operations;
- Monitor employee training programs to ensure that safety, health, and environmental information presented is current and satisfies applicable government rules, and meets Agency needs; and
- Maintain a National Aviation Safety Center for accomplishment of the SMS program requirements, library, and virtual electronic resources.
- Maintain the Safety chapters of the National Aviation Safety and Management Plan for annual updates.

2.8.6 Forest Health, National Aviation Safety Manager (FHP, NASM)

Under the Director of Forest Health Protection, State and Private Forestry, Washington Office, the Forest Health Protection National Aviation Safety Manager (FHP NASM) is responsible for coordinating safety matters for Agency and cooperators conducting FHP aviation activities such as aerial reconnaissance, aerial application, and aerial photography. The NASM is responsible for fostering and promoting a positive safety culture through incorporating the elements of SMS into all FHP aviation operations.

2.8.7 Regional Aviation Officers (RAO)

Regional Aviation Officers are responsible for fostering and promoting a positive safety culture through incorporating the elements of a SMS into Regional aviation operations, including coordination with the Regional Aviation Safety Manager (RASM) and FHP NASM on aviation safety and accident prevention matters; ensuring compliance with aviation safety policies and procedures, participating in quality assurance oversight, promoting SMS through training and awareness, and application of operational risk management processes.

2.8.8 Regional Aviation Safety Managers (RASM)

Regional Aviation Safety Managers foster a safety culture through the development of flexible, reporting, learning, just cultures to result in the establishment and maintenance of a high reliability organization. The RASM position is on the forefront of establishing and implementing SMS. Regions will ensure that qualified RASMs remain a key position and will ensure that recruiting and hiring such individuals is a high priority. The RASM shall not report to the RAO so that safety duties are separate from operational duties.

2.8.9 NASM, RASM Responsibilities

Safety oversight must be performed independently of aviation operations to avoid conflicts of interest. These key aviation positions are responsible for implementation, fostering and promoting SMS, including:

Policy

- Guiding aviation safety doctrine, philosophy, principles and practices;
- Preparing the Regional Aviation Safety and Management Plan and reviewing Forest/Unit supplements to that plan, including Project Aviation Safety Plans (PASPs);
- Assist in the development of local standard operating procedures; and
- Foster and promote doctrinal principles and safety management systems within the Region.

Risk Management

- Provide the field with operational risk management guidance;
- Conduct risk management of the regional aviation program (fleet, service provider, and cooperators, etc.) by identifying hazards, ensuring development and implementation of risk mitigation procedures and re-evaluating the process.
- Support the National aviation program by:
 1. Participation on the National Aviation Safety Council; and
 2. Participate in Risk Assessments and Mitigation.

Assurance

- Provide aviation safety oversight and review through active field presence and encourage a reporting culture between management and aviation;
- Perform as Agency primary focal point for Safety Assurance. Coordinate and participate in audits, reviews and assessments both internal and external.
- Monitor established standards and procedures and make corrections as needed;
- Monitor accident and incident trends, and implement appropriate prevention action;
- Report accidents and incidents with potential in accordance with the local emergency response plan;
- Conduct accident and incident investigations;

SAFETY MANAGEMENT POLICY

- Provide guidance, coordination, and monitoring of safety evaluations conducted by the Regional aviation staff and Forest/Unit Aviation Officers;
- Provide assistance in aviation activities to ensure best practices and procedures are understood;
- Manage SAFECOM reports adding corrective actions and transferring them to the public side of the system within 7 days of receiving;
- Monitor and develop trend analysis from the SAFECOM system and communicate lessons learned/trends and;
- Review aviation accident and incident reports and follow-up on action items.

Promotion

- Coordinate and monitor aviation safety training to promote a learning culture;
- Provide timely aviation safety information to all levels of the organization;
- Train and encourage employees to use accident prevention tools such as SAFECOMs, risk assessments, lessons learned, safety alerts, etc.;
- Communicate and coordinate with cooperators, interagency partners, and subject matter experts (SMEs) such as the Aviation Enterprise Team; and
- Recognize positive safety behavior and proactive reporting through an Aviation Award program.

2.8.9.1 National Aviation Safety Council

The National Aviation Safety Council (NASC) is a critical part of the agency SMS, and should be continually used as a resource, providing guidance and leadership to facilitate the safety risk management process. The NASC is tasked with examining “grass roots” issues pertaining to specific activities to ensure control of the safety risks and the consequences of hazards pertaining to FS aviation operations.

2.8.9.2 Membership NASC

The National Aviation Safety Council is an organized group chartered in accordance with FSM 5700. The Council is the steering group for SMS. The Aviation Safety Council at the National level must be maintained as part of the aviation accident prevention effort. The charter is located at:

http://fsweb.wo.fs.fed.us/fire/fam/aviation/charters/rasm_dm_charter.pdf

- A. The National Aviation Safety Council is organized by the BC-ASMS and chaired by one year rotations of membership and consists of the following personnel as a minimum:
1. BC-ASMS;
 2. Regional Aviation Safety Managers (RASM);
 3. National Forest Health Protection Aviation Safety Manager;
 4. National Aviation Safety Specialist (non-voting member);
 5. National Aviation Training Manager (non-voting member); and ADJUNCT MEMBERS:
 - Branch Chief, Fire Operations Risk Management (non-voting member)
 - Branch Chief, Aviation Operations (non-voting member);
 - Branch Chief, Aviation Maintenance/Airworthiness(non-voting member); and
 - Branch Chief Aviation Policy & Planning/Deputy AD Aviation (non-voting member).
- B. The Aviation Safety Council meets semi-annually and conducts monthly conference calls.
- C. The Aviation Safety Council minutes may document specific action items, persons responsible for implementation, and due dates.

2.8.9.3 Responsibilities

- Reviews operational safety performance within the functional areas listed in section 1.2 of this manual and ensures that hazard identification and safety risk management are carried out as appropriate, with staff involvement as necessary to build up safety awareness;
- Coordinates the resolution of mitigation strategies for the identified consequences of hazards and ensures that satisfactory arrangements exist for safety data capture and employee feedback;
- Assesses the impact of operational changes on safety;
- Coordinates the implementation of corrective action plans when required;
- Convenes meetings or briefings as necessary to ensure that ample opportunities are available for all employees to participate fully in the management of safety;
- Ensures that necessary corrective action discovered as a result of SMS activities is taken in a timely manner;
- Reviews the effectiveness of previous safety recommendations;
- Oversees safety promotion and ensures that appropriate safety, emergency and technical training of personnel is carried out that meets or exceeds minimum regulatory requirements;
- Promotes the SMS Guide through the exchange of ideas, discussions, and reports of flight hazards or deficiencies;
- Encourages the application of best practices to the Forest Service at all levels of the organization;
- Tracks the accomplishments of action items from all aviation Accident Review Boards and Incident With Potential Review Boards;
- Reviews SAFECOM trends, Safety Alerts and Technical Alerts; and disseminates information in a timely manner.
- Provides recommendations to improve aviation safety plans, policies, and procedures designed to enhance aviation safety; and
- Annually review the SMS guide, the National Aviation Safety and Management Plan.

2.8.9.4 Meeting Requirements

Meetings will be held monthly via conference call, and semi-annually via site meeting, or more often, if deemed necessary by the chair. The chair shall ensure an agenda is prepared and distributed to committee members in advance of the meeting. Minutes of each semi-annual meeting will be prepared by the chair of the NASC.

2.9 Emergency Preparedness and Response

Forest Service local units shall establish procedures in an Emergency Response Plan to:

- A. Coordinate and plan the response to aviation accidents and incidents; and
- B. Execute periodic exercises of mishap response plans.

Emergency response information may be detailed separately in the Interagency Aviation Mishap Response Guide, or other document which contains all of the elements necessary for effective aircraft mishap, search and rescue response. The guide must be updated annually at a minimum.

Emergency response preparedness includes continual updating of information, training for employees, and simulation exercises (emergency response drills).

2.10 Documentation

Pertaining specifically to SMS requirements, the agency maintains SMS information, in paper or electronic form, contained in various documents to include but not limited to:

- A. Safety Management System Guide;
- B. Safety goals and objectives (Aviation plans);
- C. Reported hazards (Aviation Risk Management Workbook, PASP, JHA, SAFECOM);
- D. Agency risk exposure (Aviation Risk Management Workbook);
- E. QA audit performance (internal and external)(Program reviews, compliance inspections, annual reports);
- F. Corrective actions pertinent to risk assessments, audits and Accident Review Board (action plans);
- G. Change management actions(Aviation planning documents at all levels);
- H. Holistic SMS performance (Program reviews, annual report, external audits);

SAFETY MANAGEMENT POLICY

- I. Safety committee meeting activities (agendas, minutes, resulting actions, etc.);
and

- J. SAFECOMs

All documentation and/or records, either in paper or electronic form, shall be legible, dated (with dates of revisions), readily identifiable, maintained in an orderly manner, and retained for a specified period as determined by the agency. The current versions of relevant documents will be made available at all locations where operations essential to the effective functioning of the SMS are performed and obsolete documents and/or records will be promptly removed from all points of use or otherwise assured against unintended use.

3. Safety Risk Management

Risk is an expression of the impact of an undesired event in terms of event severity and event likelihood. Throughout the risk management process, hazards are identified, risks analyzed, assessed, prioritized, and results documented for decision-making. The continuous loop process provides for validation of decisions and evaluation for desired results and/or the need for further action. The goal for risk management is not to eliminate all risk, but to manage those risks that cannot be eliminated so the mission can be accomplished with minimum negative impact. Risk management is a robust component of the Agency's SMS and shall occur throughout Agency aviation operations.

The process described by the FAA AC120-92b (or most current version) involves seven steps in the complete cycle of risk management:

1. Define Objectives (i.e., System and task analysis);
2. System Descriptions: Identify each system - component that contributes to the mission. Consider change management in systems;
3. Hazard Identification: Brainstorm all possible failures, threats, and danger points;
4. Risk Analysis: Disassemble the hazard to identify outcomes, impacts of a hazardous event, and degree of **exposure** to risk. (Ask the question: If this hazard exists, then what happens?);
5. Risk Assessment: Evaluate the combined effects of the potential for injury, damage, fatality, etc. based upon **likelihood and severity** of an event occurring;
6. Decision Making: Determine mitigations needed, conduct cost/benefit analysis, develop an action plan, and implement controls. (This is risk management); and
7. Validation of Control: Monitor controls and supervise operations to determine if controls are effective.

Using various techniques described in this section, the agency has defined acceptable and unacceptable levels of safety risk. Descriptions have been established for likelihood and severity levels (described in Section 3.5.6) to include authority for safety risk acceptance decisions. These risk decisions may apply in the short-term while safety risk controls/mitigation plans are developed and executed. Operational Risk Management (ORM) is a process designed to detect, assess and control risk while at the same time enhance mission performance.

The process for completing operational risk management can be found in the *Incident Response Pocket Guide* (IRPG), the *Interagency Standards for Fire and Fire Aviation Operations* (Red Book), or the *Interagency Helicopter Operations Guide* (IHOG).

SAFETY RISK MANAGEMENT

Risk management (RM) can be divided into three levels.

1. **Time Critical.** This method of risk management is an “on-the-run” mental or verbal review of the situation using an Operational Risk Management (**ORM**) process without necessarily recording the information. Many of the skills used in this context are applicable to normal mission where deliberate risk management has occurred and crews must manage risk in a dynamic situation. Note that “Time Critical” does not mean “hasty” or “uninformed.”
2. **Deliberate.** This **RM** method is used with adequate planning time and may involve more than one system at its source. It involves a systems identification, hazard identification, risk assessment/analysis, **consideration** of control options and risk decision making, implementation of controls, and supervision. This will involve documentation of the process and actions. Examples of the tools in use for deliberate RM are project aviation safety plans (PASP) and job hazard analysis (JHA).
3. **Strategic/Programmatic.** Strategic Risk Management is conducted at the highest levels of the organization and is typically applied to “systems of systems” type complexity, and requires more sophisticated techniques and professional reviews. A system or task description should completely explain the interactions among the software, hardware, environment, live ware that make up the system in sufficient detail to identify hazards and perform risk analysis. An example product of the strategic risk assessment process is a Safety Impact Analysis.

Strategic risk assessments should be used in instances where an entire program-wide assessment is deemed necessary; new technology or a change in process is being proposed; or when risks appear consistently high in a specific functional area. The strategic process produces a permanent record of findings and decisions used for long term planning, organizational decision-making and as authoritative training resources.

Note: The Strategic Risk Management process shall not preclude employees or contractors from taking interim immediate action to eliminate or mitigate existing safety risk when and where it is recognized that urgent action is required.

3.1 Program-wide Risk Assessment

Safety risk management examines system design and function as a strategic process. That means looking at what we do and how we do it. A program-wide risk assessment shall be proactively carried out to facilitate the anticipated changes in programs. Program-wide risk assessment will consider the following, at a minimum:

- Any interactions with other systems in the air transportation system (e.g. airports, airspace, UAS);
- The functions described in section 1.2 of this manual;
- Employee tasks required to accomplish the functions in section 1.2 of this manual;
- Required human factors considerations of the system (e.g. cognitive, ergonomic, environmental, occupational health and safety) for operations and maintenance;
- Hardware components of the system;
- Software components of the system;
- Related procedures that define guidance for the operation and use of the system;
- Training requirements (existing and potential);
- Ambient environment and cost/benefit analysis of mitigations;
- Operational environment and assessment of quality of the program;
- Maintenance environment;
- Contracted and purchased products and services;
- The interactions between items or issues defined in the list above; and
- Any assumptions made about the systems, system interactions, and existing safety risk controls/mitigation.

3.1.1 Management required action:

An action plan is required as the implementation tool for strategic and deliberate program risk assessments. The Branch Chief of Aviation Safety Management is assigned the overall responsibility of the completion of the management action plan. Each responsible manager is required to continually evaluate the systems and processes under their cognizance, measure performance, identify hazards, and assess related risk. Examining the probable threats and areas of common errors in these systems and processes will provide increased clarity into the hazards affecting aviation operations.

Risk management processes may need to be altered to meet constraints imposed by time, equipment, and/ or operational needs. The process by which risk is managed is cyclic and works in a continuous loop of events that continue throughout the mission and should be applied throughout the entire operation from planning through execution to the evaluation phase.

3.2 Management of Change in Terms of Risk

The WO function of Doctrine, Communications and Risk Management will identify and determine acceptable safety risk for changes within the organization which may affect established processes and services by new system design, changes to existing system designs, new operations/procedures, or modified operations/procedures.

The following items **shall not** be implemented until the associated risks of each is determined to be acceptable using the risk assessment procedures contained in this manual and the Change Management and Implementation Guide:

- A. New system designs;
- B. Changes to existing system designs;
- C. New operations/procedures; and
- D. Modified operations/procedures.

The Change Management and Implementation Guide 2011 is found:

http://www.fs.fed.us/fire/aviation/av_library/Change%20Management%20and%20Implementation%20Guide%202011%20Final_w_Cover_toc.pdf

3.3 Hazard Identification

3.3.1 Identify Hazards and Consequences

Potential hazards may be identified from a number of internal and external sources. Hazard scenarios may address the following: who, what, where, when, why, and how, regarding the hazard that is causing concern, as well as its potential consequences. This provides an intermediate product that expresses the condition and the consequences that will be used during risk analysis.

Hazards shall be identified for the entire scope of the system that is being evaluated, as defined in the system description, and documented using the hazard reporting form. Once a hazard has been identified and documented, the information shall be tracked and managed as described in the procedures following.

3.3.2 Hazard Identification Requirements and Procedures

To formalize the hazard identification process, the following requirements are established:

- A. System and process hazards as described in section 3.1 will be proactively identified and communicated through SMS activities by all managers;
- B. All employees are responsible for continued vigilance to identify hazards they observe or experience via the performance of their duties;
- C. SAFECOM reports form (FS-5700-14) will be used to increase communication and awareness of potential hazards; (ref section 4.3.1)

3.4 Hazard Reporting and Management

For a hazard reporting program to be effective hazard reports must be processed efficiently and effectively:

- A. Aviation managers at all levels are responsible for analyzing and trending hazard information;
- B. Applicable subject matter experts will be involved in analyzing identified hazards;
- C. BC-ASMS shall synthesize hazards reported to elevate potential serious aviation hazards as appropriate both internal and externally;
- D. The BC-ASMS in conjunction with the NASC may authorize special studies and risk assessments of hazards as needed to increase awareness and develop risk mitigations for various hazardous activities;

SAFETY RISK MANAGEMENT

- E. RASMs will track hazard reports, assign appropriate risk prioritization, and provide dissemination to the field users; and;
- F. Personnel responsible for the reporting system will insure the program is not used for punitive action and will safeguard information from unauthorized release.

3.5 Safety Risk Management Procedures

Safety risk management is the core component of the safety management system. Mitigation of the safety risks is intended to reduce the consequences of hazards to a level as low as reasonably practicable (ALARP). The significant concepts regarding safety risk management discussed throughout this section can be summarized as follows:

- A. There is no such thing as absolute safety — in aviation it is not possible to eliminate all safety risks;
- B. Safety risks must be managed to a level “as low as reasonably practicable” (ALARP); and
- C. Safety risk mitigation must be balanced against:
 - 1. time;
 - 2. cost; and
 - 3. the difficulty of taking measures to reduce or eliminate the safety risk (i.e., managed).

A key part of the safety risk management process is the involvement of employees who will be affected by a decision; their expertise is often critical to decision making. The benefits to using this decision process include:

- A. Avoiding costly losses in the decision making process;
- B. Ensuring that all aspects of the risk problem are identified and considered when making decisions;
- C. Ensuring legitimate interests are considered;
- D. Providing the decision makers with tools to make good decisions;
- E. Making decisions easier to explain;
- F. Providing a standardized set of terminology used to describe risk issues contributing to better communication about risk issues; and
- G. Providing significant savings in time and money.

3.5.1 Organizational Decision Making

Employees must assure operations are conducted within the limits of the agency's level of acceptable risk. Exercising judgment on how to eliminate or reduce hazards to lessen the overall risk is inherent in the risk assessment process. These basic decision-making principles must be applied before any anticipated job, tasks, or mission is performed:

- **Accept no unnecessary risk.** Unnecessary risk contributes no benefits to the safe accomplishment of a task or mission. The most logical choices for accomplishing a mission are those that meet all the mission requirements while exposing personnel and resources to the lowest possible risk.
- **Make risk decisions at the appropriate level.** Making risk decisions at the appropriate level establishes clear accountability. Those accountable for the success or failure of a mission must be included in the risk decision process. Supervisors at all levels must ensure subordinates know how much risk they can accept and when they must elevate the decision to a higher level.
- **Recognize when benefit outweighs risk.** Weighing risks against opportunities and benefits helps to maximize unit capability. Even high-risk endeavors may be undertaken when there is clear understanding of the benefit to the agency. Recognize and act upon extreme risk situations with a NO – GO decision.

SAFETY RISK MANAGEMENT

3.5.2 Risk Assessment Matrix

Risk Assessment Matrix

	Severity			
Likelihood	Negligible IV	Marginal III	Critical II	Catastrophic I
Frequent A				
Probable B				HIGH 4
Occasional C			Serious 3	
Remote D		Medium 2		
Improbable E	Low 1			

3.5.3 Safety Risk Probability

Safety risk probability is defined as the likelihood that an unsafe event or condition might occur during operations. This probability of occurrence is based on analysis considering the following:

- A. Is there a history of similar occurrences to the one under consideration, or is this an isolated occurrence? Occurrences across aviation will be considered, as applicable.
- B. What other equipment or components of the same type might have similar defects?
- C. How many personnel are following, or are subject to, the procedures in question? and
- D. What percentage of the time is the suspect equipment or the questionable procedure in use?

SAFETY RISK MANAGEMENT

The following shall be used to standardize the assignment of probability:

Likelihood Scale Definitions

Frequent	Likely to occur or continuously experienced.
Probable	Will occur several times, will occur often.
Occasional	Likely to occur sometime or several times.
Remote	Unlikely to occur, but can reasonably be expected to occur.
Improbable	So unlikely, it can be assumed it is possible, but probably will not occur.

3.5.4 Safety Risk Severity

Safety risk severity is defined as the possible consequences of an unsafe event or condition, taking as reference the worst foreseeable situation. The assessment of the severity of the consequences can be determined by asking:

- A. How many fatalities or injuries may occur (employees, passengers, and the general public)?
- B. What is the extent of property or financial damage (direct property loss to the operator, damage to aviation infrastructure, third-party collateral damage)?
- C. What is the environmental impact (spillage of fuel or other hazardous product, and physical disruption of the natural habitat)? and
- D. What are the political implications and/or media interest?

Based on these considerations, use the following risk severity table:

Severity Scale Definitions

Catastrophic	Results in fatalities and/or loss of the system.
Critical	Severe injury and/or major system damage.
Marginal	Minor injury and/or minor system damage.
Negligible	Less than minor injury and/or less than minor system damage.

SAFETY RISK MANAGEMENT

3.5.5 Safety Risk Tolerance

Once the level of risk has been determined, in terms of probability and severity, the next step in the process of bringing the safety risks under organizational control is the assessment of the tolerability of the consequences. This is known as assessing safety risk tolerability.

Obtain an overall assessment of the safety risk by combining the safety risk probability and safety risk severity tables into a safety risk assessment matrix.

Descriptions of the Risk Levels are depicted below.

Risk Level

Risk Level	Description
High 4	The combination of severity and likelihood indicate the hazard has a greater than 50% chance of exceeding control measures and the result will be critical or worse. Benefit to risk must be carefully weighed and planners ensure that: 1) emergency response resources are positioned for immediate use, 2) approval is made by the highest official in the local organization, and 3) crewmembers are well rested, briefed and aware of the known threats and their controls.
Serious 3	Risk is high enough that there is uncertainty as to whether the mission can be accomplished without an accident and/or loss of life or serious injury. Hazards may or may not be able to be mitigated.
Medium 2	Degree of risk is such that the mission can almost certainly be accomplished safely. Hazards exist, but can be mitigated.
Low 1	The risk involves little or no impact on mission accomplishment. Hazards are those normally associated with flight (possibility of bird strike, mechanical, malfunction, etc.).

SAFETY RISK MANAGEMENT

3.5.6 Risk Tolerability Protocol, Line Authorities and Controls

For each level of risk, Low, Medium, Serious, High there is a generally accepted protocol for management to accept responsibility and be accountable for resulting risks. The following protocols are recommended, but may be adjusted accordingly for application at any level, during the risk management planning process. If the process shows an unacceptable level of risk, then mitigation to an acceptable level is required or the decision must be made at the appropriate level. The table below provides examples of how to appropriately assess levels for risk decisions. These risk decisions are documented through a Risk Tolerability Decision Matrix.

Risk Tolerability Decision Matrix Example**Appropriate Management Level for Risk Decisions**

Risk Level	Fire	Non-Fire
High	Incident Commander or Operations Sections Chief	Line Officer/Manager
Serious	Incident Commander or Operations Sections Chief	Line Officer/Manager
Medium	Air Operations Branch Director	Line Officer/Manager
Low	Base Manager	Line Officer/Manager

3.5.7 Safety Risk Control and Mitigation

While the risks inherent throughout aviation operations will be continually assessed, experts within the agency can implement one or more risk control measures designed to reduce or eliminate the assessed risk. There are three generic strategies for safety risk control/mitigation:

- A. **Elimination.** The operation or activity is cancelled because safety risks exceed the benefits of continuing the operation or activity. An example of an elimination strategy: Operation into a helispot surrounded by complex geography is cancelled.
- B. **Mitigation.** The frequency of the operation or activity is reduced, or action is taken to reduce the magnitude of the consequences of the accepted risks. An example of a mitigation strategy: helicopter operation into a helispot surrounded by mountainous terrain is limited to daytime, visual conditions.

SAFETY RISK MANAGEMENT

- C. **Residual risk exposure.** Action is taken to isolate the effects of the consequences of the hazard or build in redundancy to protect against them via mitigation. The remaining risk is evaluated and determined to be acceptable or requiring additional mitigation.

Residual risk shall be evaluated after creation of safety risk controls/mitigations. An example of a strategy based on residual risk exposure:

- **Operation into a helispot surrounded by mountainous terrain.**
- The secondary evaluation of residual risk may determine that employed controls are not adequate. In this circumstance, additional controls or modification is necessary to bring the risk to as low as reasonably practical.
- Subsequently the mission is limited to aircraft with specific performance capabilities and flight crews carded for specific mountain/back country experience in addition to daytime, visual conditions limitations.

3.5.8 Risk Assessment Documentation Procedures

To formalize risk management documentation, the following requirements are established for aviation operations:

- A. Risk assessment documentation will be managed in accordance with agency/unit Aviation Safety and Management Plans;
- B. Strategic and deliberate risk assessments shall be documented in accordance with the procedures set forth in this Guide.
- C. Controls shall be monitored using the risk assessment worksheet and action plan as documentation;
- D. Program Risk Assessments shall be maintained indefinitely in the National Aviation Safety Center library and as needed at the Region level.

SAFETY RISK MANAGEMENT

3.5.9 Agency Risk Profile

Capturing the prominent risks faced by the agency and evaluating the controls employed to eliminate or mitigate those risks is the objective of the agency risk profile. The agency risk profile is determined by reviewing the Aviation Risk Management Workbook. The following requirements are established to formalize risk profile development and documentation:

- A. The risk profile will be used to document and track prominent risk exposure. This documentation may be found in paper copy (Risk Assessment Workbooks) or on the Aviation Safety Center website: http://www.fs.fed.us/fire/av_safety/index.html.
- B. The risk systems tracked are Aircraft, Operations, Aircraft Maintenance, Facilities, Human Factors and others when deemed appropriate by the BC-ASMS;
- C. Additional local hazards and mitigations will be identified and documented using the Aviation Risk Assessment Workbook;
- D. A separate QA process will assure risk management of the specific mitigations and action plans that are tracked;
- E. The profile will be reviewed annually and updated as needed to include feedback from completed quality assurance efforts;
- F. The BC-ASMS is responsible for maintaining the agency Risk Profile; Historical profiles will be maintained in the National Aviation Safety Center safety library.
- G. All programs that utilize aircraft in support of their mission are required to conduct program risk assessments that contribute to the development of the agency risk profile (e.g., Fire, Law Enforcement, Research, Forest Health, et.al.).

3.5.10 Flight Risk Analysis and Operational Risk Analysis

Every flight has hazards and some level of risk associated with it. It is critical that management and pilots are able to differentiate, in advance, between a low risk flight and a high risk flight using a risk assessment tool that allows pilots, managers and dispatchers to see the risk profile of a flight in its planning stages.

When the risk for a flight exceeds the defined acceptable level, the flight will be further evaluated and risk decisions made by appropriate leadership.

Time-critical operational risk management will be used for decision making, to assess and track prominent risk exposure as specifically pertaining to individual flights.

THIS PAGE INTENTIONALLY LEFT BLANK

4. Safety Assurance

Safety management requires feedback on safety performance to perpetuate the safety management cycle. Through monitoring and feedback, SMS performance can be evaluated and any necessary changes to the system effected. In addition, safety assurance provides employees an indication of the level of safety performance affected by the safety management system. The agency's Management Review and Quality Assurance Guide (MRQA) provides more guidance.

The safety assurance objectives for the agency are designed using the following principles and include procedures for monitoring the performance of critical aspects of the organization. Safety assurance components are comprised of these elements:

- A. Monitoring of risk and effected controls;
- B. Internal evaluation and external audits;
- C. Corrective action requirements;
- D. Safety performance analysis;
- E. Management reviews.

4.1 Monitoring of Risk and Effected Controls

"Can do" remains an organizational strength; but when "can do" becomes "make do," do Forest Service employees must not be asked to take unacceptable risks. We intend to adopt *QUALITY* as a primary cultural value, thereby improving decision-making, and inserting more effective oversight with controls that maintain high standards in the program.

There are three primary strategies we use to maintain a healthy safety culture for Aviation Management.

- A. Safety Assurance (SA) policy and doctrinal principles;
- B. Quality Assurance (QA) as found in the National Aviation Safety Management Plan; and
- C. A training curriculum (talk-the-talk) backed by constant and consistent behaviors (walk-the-walk) that demonstrate management commitment.

SAFETY ASSURANCE

While top-level leadership and vision is crucial for a good SA program to work, so is the middle management and field level involvement and commitment to the principles of SMS/QA. Field employees are the primary force for continuously improving the system, refining and revising work processes, and coordinating through all of the organization's systems to maintain and improve the quality of aviation program.

4.2 Internal Evaluation Program (IEP) and External Audits

4.2.1 Continuous Monitoring

The agency monitors organizational performance utilizing a proactive internal evaluation program designed with the following objectives:

- A. Assess conformity with internal and interagency requirements;
- B. Measure the effectiveness of safety risk controls;
- C. Monitor products and services received from vendors and contractors;
- D. Assess agency system and process performance; and
- E. Identify hazards and deficiencies.

4.2.2 Internal Evaluation Program: Inspectors, Standardization Officers, Auditors

Aviation Safety has responsibility for Safety Assurance. Agency (IEP) personnel include members of the NASC, Fixed Wing and Helicopter Inspector Pilots, and Aviation Safety Inspectors, Airworthiness and Avionics. All inspectors should have training and/or experience in recognized quality management auditing, systems analysis, and risk assessment, as well as technical inspection principles and techniques.

Experience, training, and personality are critical qualities in an audit role. Inspector training is accomplished in a formal course setting, on the job training, with another experienced inspector, or using appropriate distance learning resources (websites, books, etc.).

SAFETY ASSURANCE

To formalize internal evaluation inspector selection procedures and documentation, the following processes are recognized in for the aviation management program:

- A. The Assistant Director, Doctrine, Communications and Risk Management in coordination with the Assistant Director Aviation is responsible for selecting and assigning the internal personnel responsible for each specific evaluation;
- B. Management will ensure each inspector has the requisite training and experience to properly conduct the evaluation, to the maximum extent possible;
- C. The inspector assigned shall be documented on the evaluation checklist;
- D. Inspectors will not be assigned to evaluate their own work product or area of assigned responsibility to prevent conflict of interest bias;
- E. Subject matter experts may assist assigned inspectors in the evaluation. This assistance does not relieve the inspector from personally conducting the evaluation. The inspector has the responsibility to identify and document findings;
- F. The Inspectors should maintain a twelve month evaluation schedule that is available to all managers.

4.2.3 Internal Evaluations

The internal evaluation program (IEP) is a continuous evaluation process that examines the effectiveness of processes, programs, and procedures integral to each functional area of the aviation program. Checklists will be used as a guide for these evaluation processes to examine the critical functions of aviation programs.

A. Aviation Management Reviews

National – Conduct Aviation Management Reviews (AMR) in accordance with FSM 5719, and/or included as a part of the fire management review (FSM 5193). In addition, in each Deputy Chief's Review, activity review, or other reviews involving aviation, provide special emphasis to the use of Forest Service owned or other Government aircraft used for administration purposes (FSM 1410).

Region/Area/Station/Forest – Conduct aviation program activities reviews in accordance with regional/local aviation management plans.

- B. **Site Visits** – Conduct site visits normally as functional assistance trips (FSM 5719).

National – Conduct and monitor at least one site visit every three years in each Region, according to the criteria for an activity review in FSM 1416 and FSM 5700.

SAFETY ASSURANCE

Region/Area/Station/Forest – Conducted at the discretion of Aviation managers and at any organizational level in accordance with local aviation plans, and FSM 5700. For example, Aviation Safety and Technical Assistance Team (ASTAT), aviation base operational reviews, and cooperator aviation program reviews address this purpose.

- C. **Aviation Program Evaluation** – Program evaluation should be conducted as part of the planning process for aviation operations and periodically reviewed to address changes in process or policy. Program reviews meet the requirement for SMS Safety Assurance.

If serious violations of Federal Aviation Regulations (FARs) are uncovered during these internal evaluations, then the Director, FAM will determine if notification to FAA officials for self-disclosure is required.

Formalized internal evaluation procedures and responsibilities are established by policy in FSM 5719, and pursuant to specific agency-wide policies established for management reviews in FSM 1410.

Any discovered findings, or discrepancies that affect aviation safety shall be thoroughly documented by the inspection team. All corrective actions should be included in the finding documentation.

Copies of standard evaluation checklists are maintained by the BC-ASMS in the National Aviation Safety Center safety library.

4.2.4 Aviation Safety and Technical Assistance Teams (ASTAT)

The Forest Service provides representation on ASTAT to support aviation resources and personnel operating in the field during periods of increased aviation operations. The team's purposes are to assist and review helicopter and/or fixed-wing operations on ongoing wildland fires and to provide safety assurance through communication from the field to Fire and Aviation leadership. An ASTAT should be requested through the agency chain of command and operates under a delegation from the appropriate state/regional aviation safety manager or multi-agency coordinating group. Team composition should be interagency whenever possible. Formal written reports will be provided to the appropriate safety manager if requested. Reports should include:

- Purpose and Objectives
- Listing and Method of Personnel Contacted
- Findings, Commendations, and Recommendations
- Follow up Actions

SAFETY ASSURANCE

An ASTAT should consist of:

- Aviation Safety Manager
- Operations Specialist (helicopter and fixed-wing)
- Pilot Inspector
- Maintenance Inspector (optional)
- Avionics Inspector (optional)

When an ASTAT has been established and given an assignment the following protocols should be used:

1. Prior to visiting any fixed-wing and/or helibase, the team must make positive contact with the receiving Forest, District Office, Supervisor, Line Manager, or Incident Commander to establish communication and schedule an in-briefing.
2. When traveling throughout the area visiting incidents, it is the team's responsibility to report activities, relate issues, provide feedback, and generally coordinate with the individual the ASTAT has been directed to report to.
3. Before leaving an Incident, Forest, or District, the team must provide an out briefing to the Air Ops and Air Support, Operations, and the local Line Manager as appropriate.
4. The ASTAT team lead will submit a formal written report or After Action/Lessons Learned to the Aviation Staff at the regional level concerning activities conducted by the ASTAT team.

4.2.5 Aviation External Audits

Coordination for external aviation audits shall be requested through Branch Chief of Aviation Safety Management. Aviation external audits will be conducted periodically for a variety of reasons. External auditors offer a perspective that is unique and apart from that of Forest Service internal evaluations. Every finding resulting from these external audits will follow the procedures listed for internal evaluation findings and corrective action in their entirety. These results will be combined with internal evaluation results in establishing trends and evaluating the organization.

4.3 Internal Evaluation Corrective Action Requirements

When an internal evaluation is completed, each finding (discrepancy) must be analyzed and a corrective action plan be developed. The finding may require validation, especially if the auditor has some doubt concerning the relevant standard as it applies to the evaluation checklist question. It is entirely appropriate at this point to perform a risk assessment for significant findings and determine if significant risk is present resulting from the discovered deficiency.

A corrective action plan for each finding shall be developed and include the responsible party, with an assigned due date to complete the action. The responsible party for the functional area associated with a particular finding should also be responsible for correcting that finding.

To formalize IEP corrective action procedures and documentation, the following requirements are established:

- A. A corrective action assignment will result from every IEP finding. Employees perceived to have the best opportunity to develop and implement a corrective action that will remedy the deficiency will be assigned;
- B. BC-ASMS is responsible for the review of corrective actions that affect safety assurance;
- C. The action plan can be closed after determining the corrective action is complete; A safety assurance check will be performed between 90 and 120 days after an action plan is closed to verify effectiveness of the implemented corrective action. This assurance check is normally assigned to a RASM for completion.

4.3.1 Reporting and Feedback System (SAFECOM)

The Aviation Safety Communiqué (SAFECOM) database is a confidential safety reporting and feedback system for accident prevention through trend analysis for employees and aircraft vendors contracted to the USFS. Data obtained from the system is monitored to identify emerging hazards, share critical safety information through alerts and bulletins, assess performance of risk controls in the operational systems and identify training needs. It is a tool used to encourage the reporting of any condition, observance, act, maintenance problem, or circumstance that has the potential to cause an aviation or aviation-related mishap. It should also be used for reporting positive safety actions and mishap prevention measures.

The SAFECOM system is **not** intended for initiating punitive actions. SAFECOM data will not be forwarded to the FAA for action. The goal of the SAFECOM system is to create a “Reporting Culture” encouraging open and honest reporting of our mistakes and failures, as well as our successes. We need to learn and share our experiences, both good and bad, to improve our effectiveness and execution. The SAFECOM system is available to all Agency personnel electronically through the Internet at <https://www.safecom.gov>. Discussions of SAFECOMs at local level meetings encourage program participation and active reporting. SAFECOMs should be utilized in tailgate safety sessions, after action reviews, and briefings only after they have been properly managed through the system. While it is imperative that problems and issues be addressed at the local level, it is beneficial to share problems and solutions systems-wide.

Submitting a SAFECOM is **not** a substitute for “on-the-spot” correction(s) to a safety concern. It is imperative that safety problems and issues be addressed with everyone involved at the local level and if necessary elevated to the regional/state level and then documented in a SAFECOM (Attachment Form FS-5700-14). It is a tool used in the documentation, tracking and follow-up corrective action(s) related to a safety issue.

While it is imperative that operation managers are notified of safety issues immediately, this notification should be in a manner that provides for privacy and confidentiality. Managers at all levels are responsible for protecting personal data and sanitizing SAFECOMs prior to general distribution and posting to the public.

The SAFECOM system contains Personal Identifiable Information (PII) which is subject to the Privacy Act of 1974, 5 U.S.C. § 552a that must be protected and safeguarded.

Incident Air Operations Units and Incident Communication Centers have no authority to receive SAFECOMs from the field or distribute this information. SAFECOMs are NOT suitable for general distribution until they have been managed by Regional and National Aviation Safety Managers. The SAFECOM system contains specific information concerning vendors, aircraft tail numbers, and pilot names that link them to specific acts. Therefore, only the public version of the SAFECOM may be distributed.

SAFETY ASSURANCE

Misuse of SAFECOM information, even when unintentional, has occurred in the past. Misuse of the SAFECOM system jeopardizes the open and honest communication needed for the SAFECOM system to work effectively. The intent of this reporting system is for internal data gathering purposes only and must **not be utilized for punitive action**.

A SAFECOM **does not** replace the requirement for initiating a mishap report. Mishaps shall be reported immediately by the most expeditious means available in accordance with the local agency emergency response plan.

The SAFECOM system shall be promoted by all levels of management. SAFECOM system needs to be utilized appropriately in a non-punitive manner for the purposes of accident prevention. The Branch of Risk Management has responsibilities for monitoring the use and management of the system and ensuring accountability for system managers.

In order for SAFECOM's to be effective as an accident prevention tool, they should be reported as soon as possible to the agency with operational control of the aircraft at the time of the event. SAFECOMs can be submitted online at www.safecom.gov or via phone at 888-464-7427. Hard copies can be faxed to the Aviation Safety Center at 208-387-5735 or submitted through the Unit/Forest Aviation Officer. SAFECOM system managers shall address SAFECOMs and make public within 7 days.

The following are examples of how SAFECOM information MUST NOT BE USED:

Claims:

- SAFECOM information is not intended to be used to support claims. All information gathered for this purpose must come from other sources.

Contracting:

- Managers must not address SAFECOMs in their daily diaries since the diaries are used by Contracting Officers. While safety events need to be documented in the daily diary, it is strictly prohibited to mention that a SAFECOM was filed or to attach a SAFECOM as a record.
- Contractor performance evaluations. The Federal Acquisition Regulations (FARs) section 42.1503 addresses the government requirement for holding past performance information. The SAFECOM does not meet the requirements of the FARs as an acceptable past performance record. Therefore, SAFECOM records/data are not to be referenced when evaluating past performance for any contract solicitation.

SAFETY ASSURANCE

Disciplinary Action:

- SAFECOM's are not to be used punitively in disciplinary actions against agency or contract employees or contractors. This includes Performance Evaluations, Pilot Evaluation Boards or Suspension/Revocation of a USFS Qualification Card.

4.3.2 Aviation Safety and Aircraft Mishap Information Processing Procedures

To formalize hazard analysis and processing the following requirements and responsibilities are established:

4.3.2.1 e-Safety System

The (E-Safety System) is an enterprise application designed to combine Safety and Occupational Health (SOH) incident reporting and Worker's Compensation (WC) case management capabilities. The e-Safety system will fully integrate both SOH and WC program areas, allowing users to work within one system. Use of this system is mandatory. The e-Safety Intranet can be accessed at:

http://fsweb.asc.fs.fed.us/HRM/owcp/esafety_index.php

4.4 Safety Performance Analysis

The National Aviation Safety Center Safety Library is the primary source of data for safety performance measurement and may be utilized by managers to evaluate risks and performance in their respective areas of responsibility.

The BC-ASMS analyzes data that has been acquired through the SMS process to demonstrate the effectiveness of risk controls.

Additionally, using SMS data, managers shall evaluate where improvements can be made to existing organization systems, processes, and procedures.

The following requirements are established to formalize safety performance analysis procedures and documentation:

- A. Utilizing the National Aviation Safety Center safety data, the BC-ASMS shall make reports available to managers;
- B. SAFECOMs will be categorized and analyzed to facilitate trend identification;
- C. The fiscal year Aviation Safety Summary will be prepared annually by the NASC and published for agency-wide dissemination; and
- D. SAFECOM summary reports will be prepared during the field/fire season. This report will be disseminated via all practical means to maximize employee awareness.

4.4.1 Safety Surveys

As a component of the annual SMS management review or strategic risk assessments, the agency may conduct a survey of personnel focused on aviation operations and safety culture. The survey responses shall be collected and analyzed by the RASM and the BC-ASMS for review by the Director, FAM.

4.4.2 Safety Investigation

The sole objective of the internal investigation of an incident involving agency and/or contract personnel, facilities, and equipment is the prevention of future accidents and incidents. The purpose of any investigation activity conducted is not to apportion blame or liability.

- A. Internal incident investigations are carried out in order to:
- B. Better understand the events leading up to the occurrence;
- C. Identify hazards and conduct risk assessments;
- D. Make recommendations to reduce or eliminate unacceptable risks; and
- E. Communicate the safety messages to the appropriate stakeholders.

Aviation Accident investigation is an assurance process and referenced in the FSM 5720. Processes for investigation are administered by the Office of Safety and Occupational Health (OSOH) and are described within the Coordinated Response Protocol (CRP) Guide.

The Aircraft Accident Investigation Guide (Appendix 1) will be used for all aviation accidents and Incidents With Potential (IWP).

The first actions of management personnel at the scene of an accident, incident or high accident potential occurrence will be to take any measures necessary to prevent further injury or illness. This includes emergency medical care. It is essential that this occur prior to any other actions, including notification/reporting. Activate the local Emergency Response Plan (ERP) incident/accident response plan.

Notification is a brief communication concerning the accident or incident. It should contain enough information to identify the classification, category, time, location, and a brief description of the occurrence. Do not delay initial notification in an attempt to gather comprehensive information. The investigation process may be triggered by a SAFECOM notification (report), or simply by employee observation of an incident.

SAFETY ASSURANCE

The information disclosed by accident investigation reports, accident review boards and other mishap investigation processes is utilized for the purpose of improving and validating SMS processes. Mishap data is one method for measuring the success rate of risk controls, one example of an industry metric is the aircraft accident rate which is determined by accidents per 100,000 flight hours.

The NTSB has the authority to investigate all aircraft mishaps. In the event that the NTSB exercises their authority to investigate a Forest Service aircraft mishap, the Forest Service reserves the right to conduct a separate investigation in accordance with FSH 6709.11 through formal agreement, notification, and request to the NTSB. The Forest Service may also be a party to the NTSB investigation. When the agency has party status to an NTSB investigation, all authority and control of the investigation is maintained by the NTSB investigator in charge (IIC). All documentation of evidence and release of information is under the control of the IIC.

The Delegating Authority will determine the investigation needs associated with and relevant to the reported mishap. In the event of incidents, incidents with potential and accidents, the line officer of the unit experiencing the aviation mishap will be appraised of the determination for the type of investigation to be conducted. In the case of mishaps generating high public interest or those that have multiple serious injuries or fatalities, a Serious Accident Investigation Team may be established by the DASHO through OSOH. The BC-ASMS is authorized to determine the need for an investigation for the purpose of developing lessons learned and identification of systemic defects; coordination with the Regional Aviation Safety Manager shall occur.

Accidents, incidents with potential, and incidents are defined by classification and by category. Accidents should be reported according to the local unit's emergency response plan.

4.5 Classification for Notification and Reporting

- **Serious Accident:** An accident that results in substantial property damage, serious injury or illness that requires immediate emergency medical care, or death. For aircraft accidents, the term "substantial damage" is per the definition in the NTSB Part 830 rules.
- **Minor Accident:** An accident that results in minor property damage, or which results in minor injury or illness requiring medical care of a doctor, and meets the NTSB definition for a reportable event.
- **Incident With Potential (IWP):** Mishaps, events or on-going situations that have a high potential for causing death, serious injury, illness or damage to property if they recur; or that could have resulted in greater loss. The BC-ASMS determines when an incident may be classified as IWP and if it is reportable to NTSB. A high reliability organization requires close attention to IWP's to formalize procedures.

SAFETY ASSURANCE

- **Incident:** Any other occurrence which results in injury or illness requiring first-aid care, or which results in property damage. Not reportable to NTSB.

4.6 Categories for Notification and Reporting

- **Aircraft:** Occurrences involving aircraft, whether in-flight or on the ground. This includes aircraft parked at the gate. In addition to reporting/notification guidelines in this manual, procedures in the local emergency response plan should be followed.
- **Employee:** Occurrences involving injury or illness to an employee. If the employee injury or illness is sustained in operations involving aircraft, ground support equipment, or facilities, report under those categories as well.
- **Facilities:** Occurrence involving this agency's facilities - example, fire or other catastrophe in a building owned or leased by USFS.
- **Ground Support Equipment (GSE):** Property damage to GSE or caused by GSE. Also personnel injury or illness caused by GSE. If GSE is involved in an aircraft accident or incident, report under that category as well.
- **Non-Employee:** Occurrences involving injury or illness to either a contractor or volunteer, or other government representative. If injury or illness is sustained in operations involving aircraft, GSE, or facilities, report under that category as well.

Safety Assurance Cycle for SMS



5. Safety Promotion

The safety efforts cannot succeed by mandate or strictly through implementation of policies. Safety promotion sets the tone and enhances the organization's policies, procedures and processes, providing a sense of purpose and direction.

Aviation Managers must make every effort to communicate objectives, as well as the current status of SMS activities and significant events. Likewise, we must strive to create and maintain a channel of upward communication in an environment of openness.

Safety promotion includes:

- A. Training and Education;
- B. Awards; and
- C. Safety Communication.

SAFETY PROMOTION

5.1 Training and Education

The aviation safety training program ensures that personnel are trained and competent to perform their SMS duties. The scope of the safety training shall be appropriate to the individual employee's involvement in the SMS as well as overall goals of the agency.

The specific requirements are outlined in the sections below.

5.1.1 Safety Training for Employees

All Forest Service employees (FSM 5720.46) share responsibility for aviation safety. Training is crucial for a strong safety culture. Employees are expected to meet training standards:

- A. Fire Related Aviation Position. All employees who work with or around aircraft in fire related activities shall be qualified in accordance with the Fire and Aviation Management Qualifications Handbook FSH 5109.17 and National Wildfire Coordinating Group (NWCG) Qualifications and Certification Standards PMS 310-1
- B. Non-Fire Related Aviation Position. All employees who work with or around aircraft in non-fire related activities shall be qualified in accordance with the Interagency Aviation Training Guide. Personnel attempting to qualify for non-fire aviation positions may be credited for training that is equivalent to or exceeds the stated minimum requirements. Requests for in-lieu credit must be forwarded through the RASM to the National Aviation Safety Training Program Manager and be approved in writing prior to assignment.

Aviation safety training follows a building-block approach. Employees will receive training commensurate with their position level within the organization and impact on the safety of the organization's operations. Personnel with aviation responsibilities must comply with policy and program guidance (FSM 5723) to ensure their training is kept current. All aviation training is documented in each employee's training record.

Personnel should be assigned only to activities in which they have been purposefully and successfully trained. In addition to the training objectives established for employees and managers, training objectives will address:

- A. SMS roles and responsibilities;
- B. Agency doctrine, policy and objectives;
- C. Safety risk management; and
- D. Safety assurance.

Instructional System

The agency instructional system is an arrangement of resources and procedures to promote learning. Instructional design is the systematic process of developing instructional systems and instructional development is the process of implementing the system or plan.

The following instructional systems support the training and educational needs of Forest Service missions which rely upon aviation resources for transportation and operational support. Task books are to be utilized where available and developed as appropriate.

5.1.2 Interagency Aviation Training (IAT)

Refer to <https://www.iat.gov> and the IAT Guide for information on specific requirements. An interagency-wide goal is to accomplish safe, efficient, and effective utilization of aviation resources. Increasing employee awareness of policy, procedures, and safe practices must receive high priority. Aviation training, whether safety, specialized, or management, is a method to increase this awareness and a key to meeting this goal. IAT is conducted through Local/Regional sessions, and web based training.

5.1.3 Advanced Aviation Management Training (AAMT)

AAMT offers an opportunity for experienced aviation personnel and managers to learn and understand the professional aspects of aviation management in the Natural Resources Management environment. The design of this course of instruction is intended to meet the requirements established in FMR 102-33 for Federal Aviation Safety Officers. The curriculum includes instruction in the following areas:

- Accident Investigation, Human and Leadership;
- Aviation Safety Management Systems including;
 - o Safety Policy
 - o Safety Promotion
 - o Risk Management
 - o Safety Assurance and Quality

SAFETY PROMOTION

5.1.4 Operational Training Systems

SMS and risk management training components that are critical to the mishap prevention effort may include the following:

- Pilot Training:
 - Initial Mission certification
 - Aircraft type transition, IFR refresher
 - Regional Workshops
- Crew Resource Management Workshops
 - (Pilot, crewmember, mechanic, aviation managers)
- National Aerial Firefighting Academy (NAFA);
- Fire Aviation Simulation Training

5.1.5 Professional Training for RASMs and the FHP NASM

The following are the preferred training and experience levels for personnel who are newly appointed to a Regional and FHP Aviation Safety Manager position. This is also highly recommended for employees working in aviation maintenance, piloting, or aviation operations who wish to follow this process as an Individual Development Plan to further enhance their aviation career. The SMS tasks within each level do not have to be performed sequentially. The purpose of the task list is to assist in mentoring the trainee toward achievement of the desired full performance level.

Level 1 SMS: New Aviation SMS Personnel or Trainee IDP

Successfully complete the following training requirements:

- Complete a 32 hour (min) SMS course from an approved education institution or agency.
- Complete IAT training courses to qualify as Aviation Manager.
- Perform daily duties in accordance with FSM5700 in an aviation position or in a trainee detail for minimum 30 days.
- Participate as a member of a FS Aviation Safety and Technical Assistance Team (ASTAT) for a minimum of 5 working days.

-AND-

SAFETY PROMOTION

- Perform daily duties and function as a QTI Trainee on a Region level aviation accident/incident.
- QTI – SME assignment on an aircraft accident/Incident investigation.

Level 2 SMS: **Qualified Technical Investigator;
FS Interagency Aviation Training (IAT) Trainer**

Successfully complete the following training requirements and meet the minimum qualification as a Qualified Technical Investigator (QTI).

- Attend the agency accident investigator (QTI) workshop
- Successfully complete a basic aviation accident investigation course from the NTSB, FAA, or University.
- Participate as team member on a WO Serious Accident Investigation (SAI) involving one or more injured or fatal personnel.
- Recommended by a qualified ASI to lead a region-level investigation team as a party to an NTSB investigation.

-AND-

Perform daily duties in accordance with FSM5700 in an aviation position

- Complete an IAT –Trainer (A 220) course or equivalent
- Perform successfully as an IAT instructor

Level 3 SMS: **Certificated Federal Aviation Safety Officer (FASO);
Certificated Air Safety Investigator (ASI)**

This is the full professional level SMS Officer that is achieved when serving in a position that has responsibility for either of the functions listed above (FASO or ASI).

The Level 3 SMS Officer achieved Level 1 and 2, and has the following expertise:

- Possesses an FAA Private Pilot or higher certificate -or- FAA Airframe and Powerplant Mechanic certificate.
- Performs daily duties and functions in a position as a RASM, RAO, Enterprise Team Safety Officer, or Aviation Inspector.

SAFETY PROMOTION

- Successfully completed a minimum of 16 hours of instruction in the previous 24 months, in the following subjects.
 - Human Factors
 - Aviation Risk Management
 - Aviation Safety Program Management
 - Aviation Legal aspects

-AND-

Functions successfully as a QTI/ASI trainee:

- Successfully lead a Region-level accident/incident investigation with a FS team.
- Participate as team member on WO aviation accident/investigation involving one or more injuries/fatalities as an ASI trainee. Investigation team is party to an NTSB investigation.

Successfully complete the following ASI training requirement.

- Successfully complete an NTSB aviation accident investigation course.
- Complete one advanced accident investigation course, or specialized course (i.e., helicopter or fixed wing investigation).

Meet experience level recognized for award of an Air Safety Investigator certificate.

- Recommended by a qualified ASI to lead a WO aviation accident investigation team as a party to an NTSB investigation.

5.2 Aviation Safety Awards Program

The Forest Service sponsors a series of awards to recognize exemplary dedication to the safety of agency aviation operations. Examples of actions that could be rewarded are:

- A. Identification of hazard(s) (An act or suggestion which prevents damage or injury);
- B. Assisting in conducting an investigation or evaluation;
- C. Accomplishing a safety training course that leads to an advanced qualification;
- D. Performing research on a topic of safety interest, and writing a report or article for employees' use.
- E. Conducting flight operations at the lowest practicable risk.

The goal is not only to reward the employee for safety vigilance and for potentially or actually preserving agency resources, but also to show by example that an investment in safety consciousness pays off in conserved resources that might otherwise be lost to accidents. The preservation of the story behind each awarded act also helps to spread the exemplary behavior pattern and enhances safety promotion.

Individuals and organizations may be recognized with awards for exceptional acts or service in support of Forest Service aviation safety and aircraft mishap prevention. Rewarding innovation allows us to utilize technological advancements to create a more effective and efficient aviation management program.

5.2.1 Airwards and Safe Flying Award for Pilots

National Airwards are intended for Forest Service employees and units, other local government employees and organizations, and non-government individuals (except contractors) and organizations who perform exceptional acts or service in support of aviation safety and accident prevention. Documentation of exceptional service must be in writing. There are two categories of aviation safety awards: individual and unit. Submit nominations for aviation safety awards to the RASM. Airwards are given at the discretion of the National Aviation Safety Council.

SAFETY PROMOTION

The Safe Flying award recognizes Forest Service employee pilots who have distinguished themselves through a history of safe flight operations.

- A. Eligibility. Forest Service pilots who have accumulated the specified flight time in hours or longevity in calendar years in the following categories are eligible for nomination and award:
1. Award of Merit. 1,000 hours or five years of accident-free flight time;
 2. Award of Distinction. 2,000 hours or 10 years of accident free flight time;
 3. Award of Excellence. 3,000 hours or 15 years of accident free flight time;
 4. Award of Honor. 4,000 hours or 20 years of accident free flight time.
- B. Standards. Only pilot-in-command flight hours qualify for this award.
1. All flight time submitted must have been accumulated on official government business;
 2. Dates for consideration need not be consecutive and;
 3. Computation dates begin on the day the nominee was placed on flight status as a Forest Service employee pilot. If the pilot has been involved in an accident attributed to that pilot's error, a new computation date begins on the day following the aircraft accident.
- C. Procedures for Nomination. The Regional Aviation Officer or a pilot's first-line supervisor may make the nomination and must include the following information:
1. Full name and assigned Region/Unit/Forest;
 2. Pilot's position and job series, GS-2181 or -2101; and
 3. Verification of flight time and years of service as a Forest Service employee pilot.

SAFETY PROMOTION

D. Exceptions.

1. Any incident where pilot error or negligence resulted in damage to an aircraft or injury to personnel, or an aviation hazard where any careless or reckless operation by the pilot has been verified, shall be cause for non-selection of a pilot nominated for this award, except when an accident was caused by material failure or other such circumstances, and the aviation accident report and review established that the pilot's actions were not a contributing factor.
2. Nominations which include an exception must be fully documented in an enclosure to the nomination. Decisions by the National Aviation Safety and Training Manager or the regional aviation safety manager relative to the exception(s) are final.

5.2.2 Aviation Management Award

The Aviation Management Award recognizes individuals and groups at the District, Forest or Regional level for their contribution towards aviation safety awareness and objective accomplishment. Aviation Management Awards are presented at the discretion of the AD-A through coordination with subordinate Branch Chiefs for aviation and the BC-ASMS. Further guidance, including the nomination process, can be found in FSM 5710.6.

5.3 Safety Communication and Awareness

Effective communication makes the difference between an accident occurring or being prevented. Leadership/supervisors will develop positive communications with the field. Leadership and aviation users are responsible to each other to promote open lines of communication, both up and down the chain of command. Much of the information that is used to develop our publications comes from the field.

The SAFECOM system, as a reporting system, fulfills both the assurance and promotion roles in accident prevention, lessons learned and safety communication. (Reference section 4.3.1 for further guidance) RASM's, RAO's, and the FHP NASM are the conduit and focal point for this communication to occur frequently and routinely.

Safety communication therefore aims to:

- A. Ensure that all staff members are fully aware of the SMS;
- B. Convey safety-critical information;
- C. Explain why particular actions are taken;
- D. Explain why safety procedures are introduced or changed; and
- E. Convey "nice-to-know" information.

SAFETY PROMOTION

5.3.1 Publications.

In order to facilitate communication, the WO function of Doctrine, Communications, and Risk Management publishes the following:

- A. Safety Alert. The "Safety Alert" is red-bordered and will be utilized to disseminate information of a significant nature regarding aviation safety within the Agency. The three areas addressed are operations, maintenance, or publications. These "Safety Alerts" will be published on an unscheduled basis;
- B. Aviation Accident Prevention Bulletin. The Bulletin is green-bordered and will be utilized to disseminate information of a general nature regarding aircraft mishap prevention concepts, methods, procedures and efforts. Bulletins will be published on an unscheduled basis as pertinent information/subject materials become available;
- C. Technical Bulletin. The "Tech Bulletin" is Blue-bordered and will be utilized to disseminate information of a general nature regarding aircraft mishap prevention concepts, methods, procedures and efforts of a technical/mechanical nature. Bulletins will be published on an unscheduled basis as pertinent information/subject materials become available;
- D. Aviation Lessons Learned. The "Lesson Learned Bulletin" is Purple-bordered and will be utilized to disseminate information of a general nature regarding lessons taken from actual events, near misses, mishaps or positive events that demonstrate the effects of best practices. Lessons Learned Bulletins will be published on an unscheduled basis as pertinent information/subject materials become available;
- E. Information Bulletin. The orange-bordered document is used to communicate general safety information that does not fall into the four above categories;
- F. Aviation Safety Summary. An annual review of aircraft mishaps, associated statistical data, and trend analysis will be published and distributed following the mishap reporting year; and
- G. SAFECOM Summaries. These are issued as Information Memoranda that maintain awareness of safety trends and lessons learned distributed during peak seasonal activity.

These publications will remain valid until rescinded by the Washington Office. Safety documents as described above might be developed and distributed with our interagency partners as appropriate. Individual regions may develop and distribute any of the safety documents listed above as needed.

6. Forms

6.1 SAFECOM

AMD-34 / FS 5700-14

		REPORTED BY: (optional)	
		Name: E-Mail: Phone: Cell Phone: Pager: Organization: Organization Other: Date Submitted: mm/dd/yyyy	
EVENT			
Date: mm/dd/yyyy	Local Time: hhmm	Injuries: Y/N	Damage: Y/N
State:	Location: (Airport, City, Lat/Long or Fire Name)		
Operational Control:			
Agency:			
Region:			
Unit:			
MISSION (* see look-up tables)			
Type: *	Other:		
Procurement: *	Other:		
Persons Onboard:	Special Use: Y/N	Hazardous Materials: Y/N	
Departure Point:	Destination		
AIRCRAFT (* see look-up tables)			
Type: *	Tail #	Manufacturer:	Model:
Owner/Operator:		Pilot:	Manager:
NARRATIVE: (A brief explanation of the event)			
CORRECTIVE ACTION: (What was done to correct the problem)			

6.1.1 SAFECOM FORM INSTRUCTIONS

The **Aviation Safety Communiqué (SAFECOM) database** fulfills the Aviation Mishap Information System (AMIS) requirements for aviation mishap reporting for the Department of Interior agencies and the US Forest Service. Categories of reports include accidents, airspace, incidents, hazards, maintenance, management and mishap prevention. The system uses the SAFECOM Form OAS 34 or FS 5700 14 to report any condition, observation, act, maintenance problem, or circumstance with personnel or 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.

These instructions and helpful hints are intended to make the process of submitting a SAFECOM as easy as possible. If you need assistance call the Forest Service at (208) 387-5285 or the Office of Aviation Services, 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 so 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. 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 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. In the **Location** field enter the airport, name of the fire or latitude and longitude, township, range and quarter section are also acceptable. The next three fields identify the Agency, Region/State 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. Enter the Agency, Region/State and Unit. From www.safecom.gov these field have look-up tables to select the **Agency, Region, and unit from. Not all agencies have Region/State and Units listed at this time, so if none are listed, leave those fields blank.** See examples below:

Agency: Bureau of Land Mgt	Region: Alaska State Office	Unit: Glenallen FO
Agency: Forest Service	Region: Region 2	Unit: San Juan NF
Agency: NPS	Region:	Unit:

The **MISSION** section asks for information that describes the mission at the time of the event. In the **Type** field, use the look-up 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 look-up table that actually describes the mission. In the **Procurement** Field, enter how the aircraft you were utilizing was procured from the look-up 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, an airport or helibase for example and 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 utilizing. 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 look-up 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 look-up 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 (i.e. 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 are only for tracking and trending purposes.

Accidents and Incidents-With-Potential (IWP) must be reported immediately via the most expeditious method in accordance with the Interagency Aviation Mishap Response Plan. A SAFECOM should be completed later, but it is not to be used as an initial notification method.

Individuals are encouraged to submit their SAFECOM directly on-line at www.safecom.gov. If access is an issue, hard copy SAFECOMS are to be sent to the local Unit/Forest Aviation Officer, Regional/State Aviation Safety Manager, or National Offices of the DOI (fax 208-433-5007) or USFS (fax 208-387-5735).

SAFECOMS contain material subject to the Privacy Act of 1974, 5 U.S.C. Section 552a. Therefore, their contents must be protected. Individuals that submit SAFECOMS online may print a copy for their personal record, but are not to share or distribute any hard copy as it contains personal information. Dispatch Centers, Operational Bases, Incident Management Teams, Area Command, Air Operations, etc., do not have authority to collect SAFECOMS from SAFECOM submitters. While it is imperative that operation managers are notified of safety issues immediately, this notification process does not include utilizing the SAFECOM system.

THIS PAGE INTENTIONALLY LEFT BLANK

6.2 Project Aviation Safety Plan (PASP)

PROJECT AVIATION SAFETY PLAN (PASP) PROJECT NAME Name of Forest			
Mission:	Project Name:	Unit:	Fixed Wing <input type="checkbox"/> Rotor Wing <input type="checkbox"/>
Anticipated Project Date(s):			
Project Plan Prepared by:	Title:	Date:	
Project Plan Reviewed by:	Title: Project Aviation Manager	Date:	
Project Plan Reviewed by:	Title: Forest Aviation Officer	Date:	
Project Plan Reviewed by:	Title: Regional Aviation Safety Mgr.	Date:	
Project Plan Reviewed by:	Title: Regional Aviation Officer	Date:	
Project Plan Approved by:	Title:	Date:	
PROJECT DESCRIPTION/MISSION OBJECTIVES: Compliance with the operational procedures outlined in this Project Aviation Safety Plan is required.			

GENERAL LOCATION/DESCRIPTION

(Provide description and attach map—map must include aerial hazards)

JUSTIFICATION FOR AIRCRAFT USE:

SAFETY MANAGEMENT SYSTEM GUIDE

DATE: 6/22/2016
 REVISION: CHANGE 3
 PAGE: 71

AIRCRAFT INFORMATION

Cooperator ☐ / Agency ☐ / Vendor ☐ / Military /RAIDS ☐ / Other ☐

Type of Flight: Desired Make/Model:

Vendor: Phone: Cell:

Aircraft N#: **Make & Model:** Aircraft Color:

Pilot Name: Pilot Contact number:

Pilot Carded: ☐ Yes ☐ No Expiration Date: A/C Carded: ☐ Yes ☐ No Expiration Date:

Type Procurement: Charge Code:

Estimated Flight Hours: **Estimated Cost:**

SUPERVISION

Project Aviation Manager: Contact Number:

Forest/Unit Aviation Officer: Contact Number:

PARTICIPANTS- list individuals involved in flight(s)

Name: Project Role/Responsibility:

Name: Project Role/Responsibility:

Name: Project Role/Responsibility:

Name: Project Role/Responsibility:

Name: Project Role/Responsibility:

Name: Project Role/Responsibility:

CARGO

Weight: Hazardous Materials ☐ Yes ☐ No Pilot Briefed ☐ Yes ☐ No

Weight: Hazardous Materials ☐ Yes ☐ No Pilot Briefed ☐ Yes ☐ No

FLIGHT FOLLOWING

Flight Follow: ☐ AFF ☐ Radio (15 minute check in) Request or Flight #: ☐

FM Receive: FM Transmit: Tones:

FM Receive: FM Transmit: Tones:

FM Receive: FM Transmit: Tones:

AM Air to Air: AM Unicom: Other:

MILITARY TRAINING ROUTE (MTR) or MILITARY OPERATING AREA (MOA)

INFORMATION -Aircraft Manager must confirm with dispatch prior to the flight that affected routes' schedules contacted for route activity

MTR/ MOA	Route Legs-Altitude	Activity	Time		Time Zone
		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start	Stop	<input type="checkbox"/> UTC <input type="checkbox"/> Local
		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start	Stop	<input type="checkbox"/> UTC <input type="checkbox"/> Local
		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start	Stop	<input type="checkbox"/> UTC <input type="checkbox"/> Local
		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start	Stop	<input type="checkbox"/> UTC <input type="checkbox"/> Local

PERFORMANCE PLANNING

The pilot is responsible for the accurate completion of load calculations. Trained personnel shall ensure that aircraft scheduled are capable of performing the mission(s) safely and within the capabilities of the aircraft selected. The Helicopter or Flight Manager shall ensure that manifests and load calculations/weight and balance calculations are completed properly using accurate environmental and aircraft data. When practical, retain a copy on the ground at the point of last FS departure base.

PERSONAL PROTECTIVE EQUIPMENT

Type of Operation (check applicable boxes)	Personal Protective Equipment Requirements
<input type="checkbox"/> Rotor Wing Ground Operations	Fire resistant clothing, hardhat w/chin strap or approved aviator flight helmet, fire resistant and/or leather gloves, all leather boots, eye protection, hearing protection.
<input type="checkbox"/> Rotor Wing All Flights	Fire resistant clothing, approved aviator flight helmet, fire and/ or leather gloves, all leather boots, hearing protection.
<input type="checkbox"/> Doors off Flight	Personnel will remain seated and inside fuselage during all flights, approved secondary restraint harness for doors off flights (only for PLDO, HRAP, HRSP, Aerial Photography, IR Operator, ACETA Gunner, Cargo Letdown)

SEARCH AND RESCUE – EMERGENCY RESPONSE

Crash/Search and Rescue Procedures:

- Contact Dispatch who will initiate the Aviation Incident/Accident Response Plan. This initiation includes accomplishing all emergency and administrative notifications.
 - **On-site emergency response will be handled by the aircraft personnel and other project personnel, and will comply with appropriate guides (examples: Interagency Helicopter Operations Guide (IHOG) or Forest's Aviation Incident/Accident Response Guide.**
-

SPECIAL CONSIDERATIONS and JUSTIFICATIONS:

(List justifications for deviating from SOP, policy etc.)

CRASH RESCUE/MEDI-EVAC PLAN – highlighted area is the minimum information regarding medical/emergency response to be filled out prior to review and approval. The remaining fields should be completed as much as practical prior to the day of operation.

General Instructions:

In the event of an accident, the _____ Operations project manager will supervise and coordinate the crash rescue activities. Specific crash rescue duties will be assigned to _____ operations personnel each morning before flights of any kind. Crash rescue and first aid equipment will be located near the _____ operations site and equipment's location made known to all personnel. Information and instructions will be sent/ received through the local dispatch office or communications.

EMT (S) ON PROJECT

Names

AVAILABLE MEDIVAC HELICOPTERS

FAA # | HEMG or Contact

Litter/Rappel/Extraction Capable?

Remarks

FAA # | HEMG or Contact

Litter/Rappel/Extraction Capable?

Remarks

NEAREST MEDICAL FACILITY | Name/Location

Latitude | Longitude | Contact Freq

VOR | Nautical Miles | DEG

NEAREST BURN CENTER | Name/Location

Latitude | Longitude | Contact Freq

VOR | Nautical Miles | DEG

LIFEFLIGHT | Name/Location

Type Aircraft | Phone # | Contact Freq

SPECIFIC INFORMATION AND INSTRUCTIONS (Utilize cell phone if possible. Do not use names over the radio)

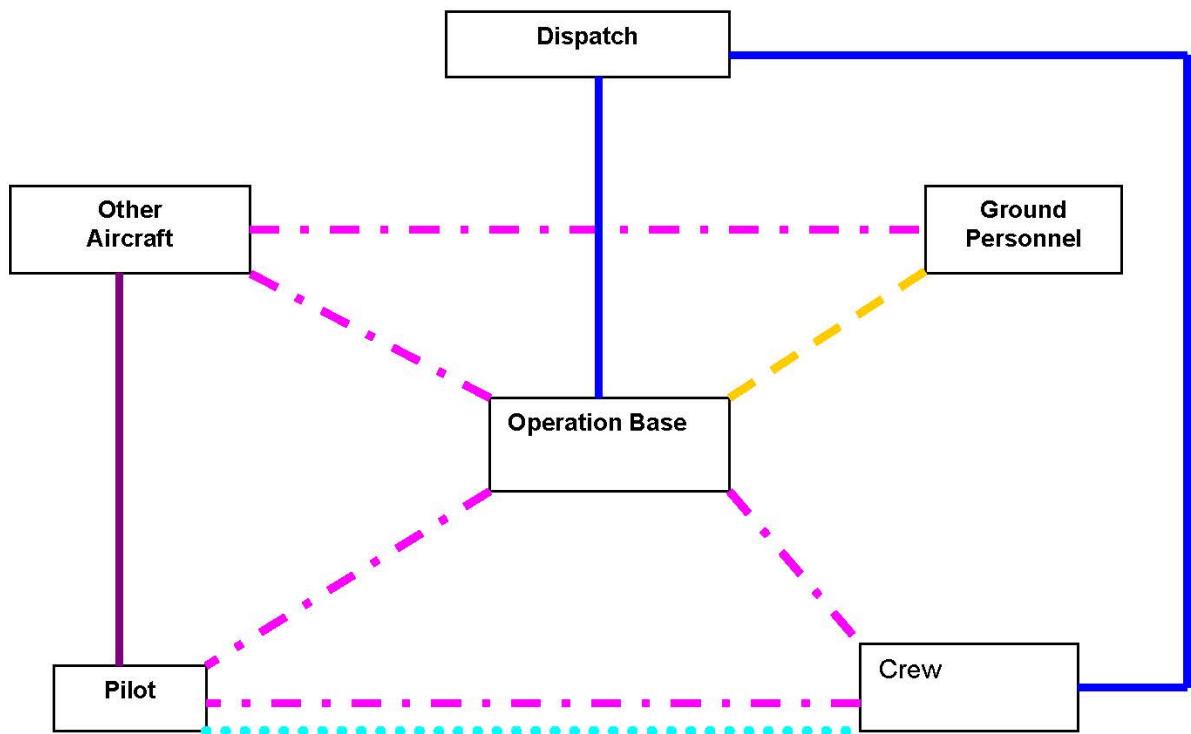
1. Nature of the injury(s)/illness
2. Is medical help needed? If available supply vital signs!
3. What transportation is needed? Is patient(s) ambulatory?
4. Location of victim.
5. Route to be taken (use land marks as guide).
6. Equipment needed.
7. Name of contact on site.
8. Notify appropriate agency line officer.

SITE CONDITIONS

Latitude: | Longitude: | Contact Freq:

Wind Speed: | Elevation (msl): | Temperature:

Terrain Factors:		Helispot Minimum Size:			
Proximity of Helispot to Injury Site :		Visibility/Sunrise/Sunset Limitations:			
Flight Hazards:					
Other Aircraft in Area (Call Signs & Freq.):					
Ground Contact & Frequencies:					
COMMUNICATIONS PLAN					
Legend		Frequency List:			
Command ————— Air to Ground - - - - - Tactical - - - - - Flight Following ••••• Air to Air —————		Name	RX	TX	Tone
Dispatch Contact Info.		Dispatch Name	Phone Number(s)	Area Covered	



AVIATION RISK ASSESSMENT WORKSHEET

Assess the risks involved with the proposed operation. Use additional sheets if necessary. Line Officer/Designee Signature Required. Reference [Risk Management Workbook](#)

Risk Assessment Matrix

	Severity			
Likelihood	Negligible IV	Marginal III	Critical II	Catastrophic I
Frequent A				
Probable B				<i>HIGH 4</i>
Occasional C			<i>Serious 3</i>	
Remote D		<i>Medium 2</i>		
Improbable E	<i>LOW 1</i>			

Appropriate Management Level for Risk Decisions

Risk Level	Fire	Project
High	Incident Commander or Operations Sections Chief	Line Officer/Manager
Serious	Incident Commander or Operations Sections Chief	Line Officer/Manager
Medium	Air Operations Branch Director	Project Aviation Manager
Low	Base Manager	Helicopter or Flight Manager

Severity Scale Definitions

Catastrophic	Results in fatalities and/or loss of the system.
Critical	Severe injury and/or major system damage.
Marginal	Minor injury and/or minor system damage.
Negligible	Less than minor injury and/or less than minor system damage.

Likelihood Scale Definitions

Frequent	Individual Fleet	Likely to occur often. Continuously experienced.
Probable	Individual Fleet	Will occur several times. Will occur often.
Occasional	Individual Fleet	Likely to occur sometime. Will occur several times.
Remote	Individual Fleet	Unlikely to occur, but possible. Unlikely but can reasonably be expected to occur.
Improbable	Individual Fleet	So unlikely, it can be assumed it will not occur. Unlikely to occur, but possible.

SAFETY MANAGEMENT SYSTEM GUIDE

DATE: 6/22/2016
REVISION: CHANGE 3
PAGE: 76

SAFETY MANAGEMENT SYSTEM ASSESSMENT AND MITIGATION (EXAMPLE)

Assessment and Mitigation of:

System-

		Pre Mitigation				Post Mitigation		
Sub System	Hazards	Likelihood	Severity	Risk Level	Mitigation	Likelihood	Severity	Risk Level
EXAMPLE: Environment	Conflicting Airspace Environment	Occasional	Critical	Serious	Local agency must provide orientation and “situational awareness” overview to SEAT pilots on Special Use Airspace, MTR, TFR, ect. Assure that dispatch and aviation personnel are trained. In dispatch procedures for SUA. Use aerial supervision when AV.	Remote	Critical	Medium
Final Assessment Value:				Prepared By:			Date:	
Operation Approved By:				Title:			Date:	

PROJECT AVIATION SAFETY PLAN BRIEFING

A copy of this briefing page will be submitted to the Agency Forest Aviation Officer/Unit Aviation Manager within 5 days of the completion of this project.

Briefing Leader: _____

Briefing Date: _____ Time: _____ Location: _____

Discussion Items:

- a. Hazard Analysis (as outlined in plan)
- b. Safety Air Ops (Ground)
- c. Safety Air Ops (Flight)
- d. Military Training Routes
- e. Flight Following
- f. Frequencies
- g. Fueling
- h. Emergency Evacuation. Plan
- i. Authorities
- j. Weather Considerations
- k. Airspace Review (TFR's, NOTAMS)
- l. Other

SPECIFIC TO LAW ENFORCEMENT MISSIONS—refer to the **LAW ENFORCEMENT AVIATION MANAGEMENT PLAN** for protocol for these items:

- Weapons carried aboard aircraft
- Hazardous Materials---mace/pepper spray
- Canines aboard aircraft
- Prisoner Transport
- Covert flight following procedures
- Risk assessment protocol for unplanned landings, etc.

Attendees Signature and Concurrence:

[illegible]

6.3 Risk Assessments General Format

General Format for Deliberate/Strategic Risk Assessments

Table of Contents	
Acknowledgements	
Executive Summary	
Introduction	
Study Plan	
Background	
Assumptions	
Systems, Hazards and Mitigation Measures	
Identification of Systems and Subsystems	
Evaluation of Hazards and Mitigation Measures	
Evaluation Model Description	
Rating of Hazards and Mitigation Measures With Benefits and Costs	
Considerations for Implementing Mitigation Measures	
Safety Assurance	
Introduction	
Subject Safety Assurance Review of Aviation Safety Communiqué (SAFECOM)	
Reports	
Subject Accidents and Incidents with Potential	
Subject Implementations Issues and Concerns	
Specific Concerns	
Subject Safety Assurance Survey and Review	
Review of previous mitigation implementations for subject Risk Assessments	
Subject Program Safety Management System Gap Analysis Summary	
Overview of Safety Management System Gap Analysis	
Change Management for Subject	
Overall Safety Assurance Conclusions and Considerations	
Findings and Recommendations	
Glossary	
References	
Appendices	
Appendix A - Project Team Members and Subject Matter Experts	
Appendix B - Project Study Plan (Scoping)	
Appendix C - Hazards and Mitigation Measures Developed by Subject Matter	
Experts	
Appendix D - Safety Assurance Survey Questions	
Summary of Documents Gathered	
Appendix E - Summary of Responses to Safety Assurance Survey	
Appendix F - Federal Aviation Administration's (FAA) Advisory Circular 120-92b	

THIS PAGE INTENTIONALLY LEFT BLANK

7. Appendices

7.1 Appendix 1 – Aircraft Accident Investigation Guide http://www.fs.fed.us/fire/aviation/av_library/index.html

THIS PAGE INTENTIONALLY LEFT BLANK