US Forest Service

Fire and Aviation Management

AVIATION SAFETY MANAGEMENT SYSTEM GUIDE

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1.0 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;

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 Administration Handbook;

* FAA Advisory Circular 120 – 92a (or current version);

* ICAO System Management Manual Doc 9859; and

* FSM 6700 Safety and Health Program

1.3 PRISM Role

Through the development and implementation of the SMS within the FS, Professional Resources In System Management (PRISM) plays an important role in supporting the efforts of the USFS aviation program. The intent of Prism's involvement is to assist the Forest Service in achieving the International Standard for Business Aviation Organization (IS-BAO) certification.

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)

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.

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 translate 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.

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- **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.

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. Classification of Incidents with Potential is determined by the US Forest Service, Branch of Risk Management.

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.

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 RASMS, FHP Aviation Officer and the Branch Chief, SMS.

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.

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.

SAFECOM - The agency Form FS 5700-14, SAFECOM: Aviation Safety Communiqué, used to report aviation mishaps or hazards; this form also is approved for interagency use as Form AMD-34.

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 objective[1] – 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 planning[2] – 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.

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.

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[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."

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 Policy

As your Chief, I am dedicated to providing a safe and healthful environment for all our employees, volunteers, and partners. Every line officer and I are committed to ensuring our workplaces are free of recognized hazards and, prior to conducting any work project, all risks are mitigated to the lowest acceptable level possible. This commitment can only be achieved through mindful participation of every employee. We must approach every task through a lens of critical awareness, looking for the hazards that may interfere with the safe and successful completion of the task at hand.

Safety cannot be an afterthought. It must be a core value of our culture, ingrained in the character of every employee. As an Agency, we must endeavor to place the safety of our co-workers and ourselves above all else. This obligation requires integrity, trust, and leadership: the integrity of every employee to adhere to Agency standards, the trust in our leaders to place safety as the first priority, and leadership at all levels to provide a culture that encourages employees to communicate unsafe conditions, policies, or acts that could lead to accidents without fear of reprisal.

I believe that accidents are preventable. However, we are often challenged with working in very high-risk and dynamic environments that are not always predictable. Consequently, we each have a responsibility to ensure that we are properly qualified, appropriately trained, and mentally and physically prepared to safely undertake our work. The prevention of accidents can only occur if we commit to safe work practices, continually assess our changing environment, refuse to assume unacceptable risks, and continually address unsafe conditions. Every employee must assume these responsibilities as a top priority. I expect every employee to take care of yourself, watch out for each other and adhere to our safety standards.

There is no task so important that it should be conducted at the expense of safe and sound operations.

/s/ Thomas L. Tidwell
THOMAS L. TIDWELL
Chief

2.1.3 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 the lowest practical level"** 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 follow the general format found in section 3.5 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.

- To formalize risk management as a part of the planning process, risk. assessments should follow the format found in section 3.5 of this Guide.

2.2   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 looking to upper management for direction and look to your field customer needs instead.

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 management decisions that reduce errors before they happen.
- Quality is not achieved by recognizing errors after they occur, then fixing them because the fly/crash/fix/fly cycle never ends.

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 and validates the need to move 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, teamwork in design is fundamental.
- Forever, maintain awareness and continue to reduce waste.
- Putting out "fires" is not the same as constant improvement of the system.

2.3 Aviation Promotion Principles

Management must be committed to implement Safety Management Systems as the 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 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', that 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 and customers inefficiencies as well as yourself.

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, show recognition for good 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 Plan (QAPP).
- Include a cross section of people to implementation of the change from the top to the bottom.

2.4 Safety Planning

This Guide is supplemented by the National Aviation Management and Safety 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, and as otherwise assigned by the Director, Fire and Aviation.

2.5 Organizational Structure and General Responsibilities

The Director, Fire and Aviation has the responsibility for 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.

2.5.1 All Employees

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

A. Every employee has a responsibility to identify hazards, assess risk and mitigate risk to the lowest acceptable level.

B. 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. 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. 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.

E. 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.

2.6 Safety Accountabilities

The Director, Fire and Aviation, is responsible for the continued support 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, Risk Management and Human Performance (AD, RMHP) 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. If there is reason to suspect willful negligence or criminal activity, lawful actions will be taken.

2.7   Key Personnel (Safety Organization)

2.7.1   The Accountable Executive
The accountable executive is the Director, Fire and Aviation (FAM). The Director, FAM has the overall responsibility for safety performance and shall designate resources essential to effectively implement and maintain the SMS.

2.7.2   The Assistant Director, Risk Management
The Assistant Director, 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.

2.7.3 The Branch Chief, Aviation Safety Management Systems

The Branch Chief, Aviation Safety Management Systems (BC, ASMS) monitors all aspects of the safety system described in this guide, and acts with the authority of the Director, Fire and Aviation 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 2.8 will be kept current and in good order;

- Develop safety goals and objectives for the accountable executive's consideration;

- 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 (NASC) for accomplishment of the SMS program requirements, library, and virtual electronic resources.

2.7.3   Forest Health, National Aviation Safety Manager (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.

2.7.4   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.

2.7.5   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. The RASM may have collateral duties but aviation safety must be their primary duty. (ref. appendices for RASM qualification, training and task book standards).

2.7.6   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 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 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;

- 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;

- 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;

- Promote and provide corrective action on SAFECOM reports, develop trend analysis and communicate lessons learned; 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.

2.7.7 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 Safety Council 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.

2.7.7.1 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.

A. The Aviation Safety Council is organized and chaired by the BC, ASMS and consists of the following personnel as a minimum:

1. BC, ASMS (Chair);

2. Regional Aviation Safety Managers;

3. National Forest Health Protection Aviation Safety Manager; and

ADJUNCT MEMBERS:

4. Branch Chief, Fire Operations Risk Management

5. Branch Chief, Aviation Operations

6. Branch Chief, Aviation Maintenance/Airworthiness

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.

2.7.7.2 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 Management and Safety Plan, and the Quality Assurance Program Plan.

2.7.7.3 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 Branch Chief, Aviation Safety Management Systems.

2.8 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 Mishap Response Guide, which contains all of the elements necessary for effective aircraft mishap, search and rescue response.

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

2.9   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);

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

J. SAFECOMs (Quarterly summaries).

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 process described by the FAA AC120-92 (or most current version) involves seven steps in the <u>complete cycle of risk management</u>;

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 **severity and likelihood** 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 severity and likelihood levels (described in Section 3.5), 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.

Risk management 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 the 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 **ORM** 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 ORM are project aviation safety plans (PASP) and job hazard analysis (JHA).

3. **Strategic/In-Depth.** Strategic Risk Management (SRM) 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, liveware (SHEL model) that make up the system in sufficient detail to identify hazards and perform risk analysis.

   This method 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 SRM 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. 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 Branch of 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:

   A. New system designs;

   B. Changes to existing system designs;

   C. New operations/procedures; and

   D. Modified operations/procedures.

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. Managers are responsible for analyzing and trending hazard information;

   D. Applicable subject matter experts will be involved in analyzing identified hazards;

   E. SAFECOM reports form (FS-5700-14) will be used to increase communication and awareness of potential hazards; (ref section 4.3.1)

F.   BC-ASMS shall synthesize hazards reported to elevate potential serious aviation hazards as appropriate both internal and externally.

3.4   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.

3.4.1   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.

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?

. 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.

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. This risk matrix is depicted below.

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. Use the table below to determine the appropriate level for the risk decision.

Risk Tolerability Decision Matrix

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

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.

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 Management and Safety 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 Assessment reports shall be maintained indefinitely in the NASC library and as needed at the Region level.

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 NASC website;

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 indentified 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 NASC 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.

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 Quality Assurance Program Plan (QAPP) outlines the processes for assuring that we are meeting our safety standards.

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; and

  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. A Quality Assurance (QA) Program Plan (QAPP); and

  C. A training curriculum (talk-the-talk) backed by constant and consistent behaviors (walk-the-walk) that demonstrate management commitment.

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

Agency IEP personnel include Fixed Wing and Helicopter Inspector Pilots, Aviation Maintenance Inspectors, and Flight Operations Standardization Officers. 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 resources (websites, books, etc.).

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

A. The AD, Aviation Management 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 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.

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 to 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 NASC safety library.

4.2.4 External Audits

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 IEP Corrective Action Requirements

When an IEP 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 IEP 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;

D. 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, access 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 <u>that has the potential to cause an aviation or aviation-related mishap</u>. It should also be used for reporting positive safety actions and mishap prevention measures.

The SAFECOM system is **not** intended for initiating punitive actions. 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.

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.

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.

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 Interagency Aviation Accident Database
The Interagency Aviation Accident Database (IAAD) is a database used for querying the collection of aviation accident and incident-with-potential (IWP) reports complied by the USDA Forest Service and DOI-NBC-AM for trend analysis of contributing factors to aviation mishaps for the purposes of aviation mishap prevention. The IAAD is currently two separate databases, DOI and USFS; however; data can be shared between the two databases.

The IAAD has six sections and all the data criteria that can be queried either individually or in combinations of factors. The sections are: General Information/METOC, Operations, Crew/Passenger, Contributing Factors, HFACs and Costs.

A detailed mishap report on each individual mishap that meets a set of selected criteria can be printed upon request. This report will contain any information present for all of the criteria factors listed above. Custom reports can be designed upon request.

The IAAD provides a portal to link electronic documents to a specific mishap. This is accessed through the Aviation Mishap Document Library. This supplemental material is linked to a mishap record by its assigned mishap number. The document will open in its native application and can be printed, copied, or saved to the user's local hard drive.

The Systems Safety Enterprise Team is responsible for entering data into the IAAD for the USFS.

4.4   Safety Performance Analysis

The NASC 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 NASC 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 quarterly. 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.

Accident investigation is an assurance process and fully referenced in the FSM 5720. Processes for investigation are administered by the Office of Safety and Occupational Health (OSOH) and are described within the Accident Investigation Guide (FSH 6709.11).

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.

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 and suspected cause. 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.

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 minor accidents, the line officer of the unit experiencing the mishap may make the determination for investigation. 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. Accidents and incidents are defined by classification and by category. Accidents should be reported according to the local unit's emergency response plan. Before they can be reported, it is necessary for the manager to classify and categorize the occurrence so

the proper procedures for reporting and investigation can be followed. When in doubt, use the highest classification.

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.

- **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) Data Collection & Program Quality Plans

1) Program Reviews

2) SMS Investigations & SAFECOM Analysis

3) Strategic Program Risk Assessments

4) SMS Performance Audits

5 Safety Promotion

The safety efforts cannot succeed by mandate or strictly though 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.

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 5704.8) share responsibility for aviation safety and training is crucial for a strong safety culture. Employees are expected to meet training standards:

A. <u>Fire Related Aviation Position</u>. All employees who work with or around aircraft in fire related activities shall be qualified if they:

1. Are certified under National Wildfire Coordinating Group (NWCG) Qualification and Certification Standards;

2. Or meet minimum training standards outlined in the Interagency Aviation Training Guide (IAT); and

3. Or meet other equivalent qualifications accepted in lieu of courses identified in the IAT (FSM 5706).

B. <u>Non-Fire Related Aviation Position</u>. Personnel attempting to qualify for non-fire aviation positions may be credited for clearly documented experience and/or training that is equivalent to or exceeds the stated minimum requirements. Requests for in-lieu credit must be forwarded to the Regional Aviation Officer (RAO) and be approved in writing prior to assignment in a non-fire aviation position.

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 (FSM5723) 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 & developed as appropriate.

5.1.2 Interagency Aviation Training (IAT)
Refer to https://www.iat.gov and the IAT Guide for information on Agency 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, Aviation Centered Education (ACE) sessions and web based training.

5.1.3 System Safety Leadership for Aviation Managers (SSLAM)

SSLAM 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 Factors, Legal Aspects;

- Crew Resource Management and Leadership;

- Aviation Safety Management Systems including;

    o Safety Policy

    o Safety Promotion

    o Risk Management

    o Safety Assurance and Quality

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)

- National Aerial Firefighting Academy (NAFA);

- Fire Aviation Simulation Training at the McClellan Training Facility.

5.1.5 Professional Training for FS Aviation SMS Officers

The following are the preferred training and experience levels for personnel who are newly appointed to a RASM 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.

<u>Level 1 SMS:</u>   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 member of a FS Aviation Safety and Technical Assistance Team (STAT) for a minimum of 5 working days.

-AND-
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 Inter-Agency 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) course
- 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
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 a WO Serious Accident Investigation (SAI) involving one or more injuries/fatalities as a 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-SAI team as a party to an NTSB investigation.

5.2 Awards Program

The Forest Service sponsors a series of awards to recognize exemplary dedication to the safety of this operation. Awards are given at the discretion of the Aviation Safety Council. 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; and

E. Length of service.

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**

 Airwards are intended for Forest Service employees and units, other local government employees and organizations, and non-government individuals 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.

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. <u>Procedures for Nomination</u>. The Regional Aviation Officer or a pilot's first-line supervisor may make the nomination and must include the following information:

1. Full name, social security number, and pilot's certificate number issued by the Federal Aviation Administration;

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.

D. <u>Exceptions</u>.

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.

5.3 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. 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.

5.3.1 Publications. In order to facilitate communication, the WO Branch of 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.

6 FORMS

6.1 SAFECOM

Safety Communiqué Form

SAFECOM Aviation Safety Communique'	**REPORTED BY: (optional)**
	Name: **AMD**-34 / FS 5700-14 **E-Mail**: **Phone**: **Cell Phone**: **Pager**: **Organization**: **Organization Other**: **Date Submitted**: mm/dd/yyyy

6 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:

7 MISSION (*see look-up tables)

Type: *	Other:
Procurement: *	Other:
Persons Onboard:	Special Use: Y/N Hazardous Materials: Y/N
Departure Point:	Destination

8 AIRCRAFT (*see look-up tables)

Type: *	Tail #	Manufacturer:	Model:
Owner/Operator:		Pilot:	

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 Aviation Management Directorate, Aviation Safety at (208) 433-5070. After the completion and submission of your SAFECOM, your data will be stored in a central database that is shared on an interagency basis 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.

APPENDIX

PROJECT AVIATION SAFETY PLAN (PASP)
PROJECT NAME
Name of Forest

Mission:	Project Name:	Unit:	Fixed Wing ☐ Rotor Wing ☐
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:**

GENERAL LOCATION/DESCRIPTION
(Provide description and attach map—map must include aerial hazards)

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:**

JUSTIFICATION FOR AIRCRAFT USE:

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

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	Personnel Protective Equipment Requirements
☐ 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.
☐ Rotor Wing All Flights	Fire resistant clothing, approved aviator flight helmet, fire and/ or leather gloves, all leather boots, hearing protection.
☐ 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)

MTR/ MOA	Route Legs-Altitude	Activity	Time		Time Zone
		☐Hot ☐Cold	Start	Stop	☐UTC ☐Local
		☐Hot ☐Cold	Start	Stop	☐UTC ☐Local
		☐Hot ☐Cold	Start	Stop	☐UTC ☐Local
		☐Hot ☐Cold	Start	Stop	☐UTC ☐Local

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!

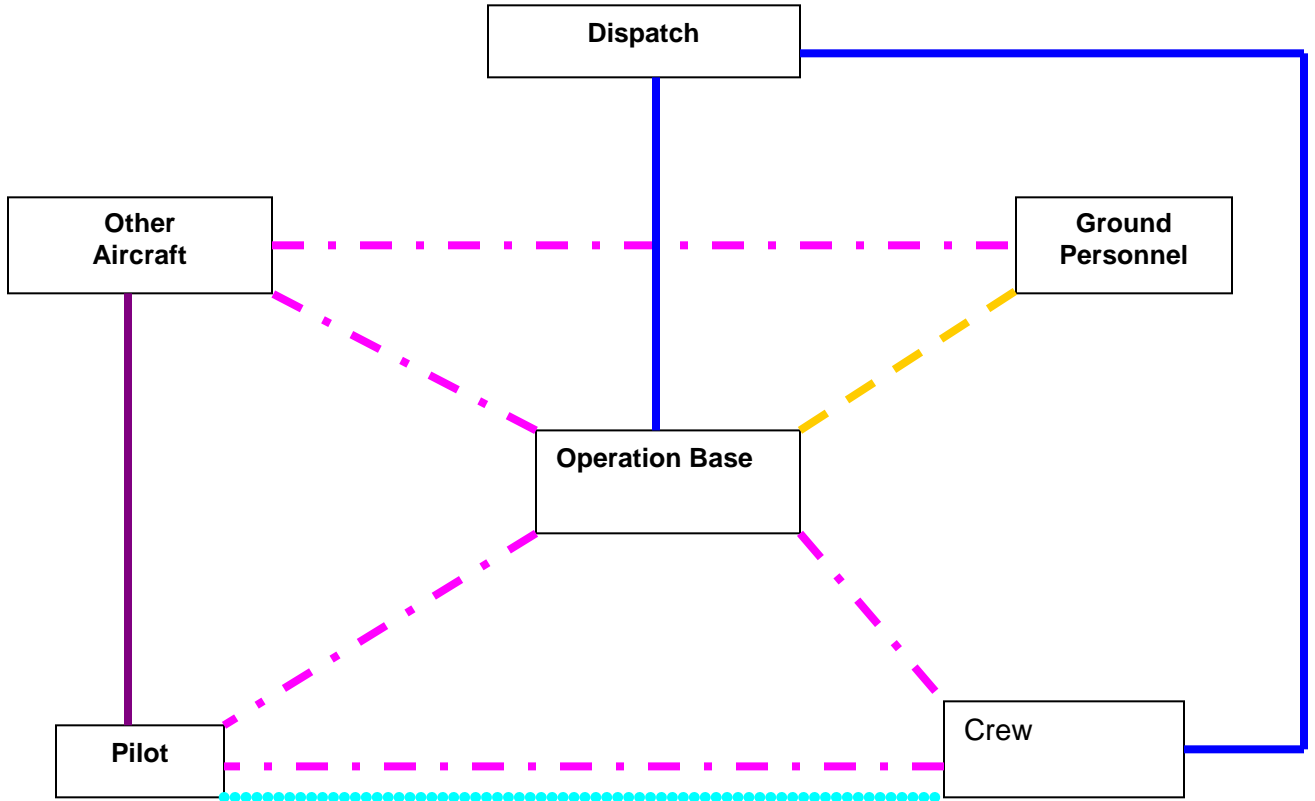| 3.	What transportation is needed? Is patient(s) ambulatory?
4.	Location of victim.
5.	Route to be taken (use land marks as guide).
6.	Equipment needed.
7.	Name of contact on site.
8.	Notify appropriate agency line officer.

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:			
	Name	**RX**	**TX**	**Tone**
Command ▬▬▬				
Air to Ground ▬ ▪ ▬				
Tactical ▬ ▬ ▬				
Flight Following ●●●●●●●●				
Air to Air ▬▬▬				
Dispatch Contact Info.	Dispatch Name	Phone Number(s)	Area Covered	

APPENDIX

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

Likelihood	Severity			
	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*			

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 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 AVATION
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

PROJECT AVIATION SAFETY PLAN BRIEFING
SIGNATURE PAGE

Attendees Signature and Concurrence:

Name	Project Responsibility/Role	Date