U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
National Policy

ORDER 8000.369

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SUBJ: Safety Management System Guidance

This Order provides guidance for implementation of a common Safety Management System (SMS) within the Federal Aviation Administration (FAA). Specifically, this Order:

Furthers the practice of managing safety by moving to a more process-oriented system safety approach with an emphasis on managing systems that ensure risk management and safety assurance.

Sets forth basic management principles to guide the FAA in safety management and safety oversight activities. Requires adopting a common approach to implementing an integrated SMS, including safety culture and other attributes as applicable.

Requires the development and implementation of a plan for functions under the SMS, including, where appropriate, the structure of safety oversight relationships with the segment of industry for which it holds safety oversight responsibility.

This order immediately applies to the Aviation Safety Organization, Air Traffic Organization and Office of Airports. This order is written to allow for application to other FAA organizations as deemed appropriate by the Administrator

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Acting Administrator

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Chapter 1. General Information

1. Purpose of This Order.

a. Provides guidance for implementation of a common Safety Management System (SMS) within the Federal Aviation Administration (FAA).

b. Explains the SMS principles and requirements.

c. Establishes a SMS Committee.

d. Standardizes terminology for the SMS. See Appendix A for a list of key terms and a glossary.

e. Requires FAA organizations to establish guidance for their own SMS activities and their industry segment on implementing SMS.

2. Audience. This order immediately applies to the Aviation Safety Organization, Air Traffic Organization and Office of Airports. This order is written to allow for application to other FAA organizations as later deemed appropriate. It refers to individuals and entities over which the FAA has safety oversight jurisdiction as aviation product/service providers. Entities that provide products and services include manufacturers, operators, maintainers, educators, providers of air traffic services, and others. Entities may be organizations or individuals. For purposes of this Order, the only FAA organization considered to be an aviation product/service provider is the Air Traffic Organization (ATO).

3. Where Can I Find This Order? You can find this Order on the MyFAA Employee website: https://employees.faa.gov/tools_resources/orders_notices

Chapter 2. Background and Supporting Requirements

1. Statutory Basis.

a. The SMS doctrine is derived in part from the statutory authority in Title 49 of the United States Code (49 U.S.C.) and Title 14 of the Code of Federal Regulations (14 CFR). Title 49 U.S.C. Chapter 401 of subpart I, part A, Section 40101(d), establishes safety considerations in the public interest and states that the Administrator shall consider the following matters, among others, as being in the public interest:

(1) Assigning, maintaining, and enhancing safety and security as the highest priorities in air commerce.

(2) Regulating air commerce in a way that best promotes safety and fulfills national defense requirements.

(3) Encouraging and developing civil aeronautics, including new aviation technology.

(4) Controlling the use of the navigable airspace and regulating civil and military operations in that airspace in the interest of the safety and efficiency of both of those operations.

(5) Consolidating research and development for air navigation facilities and the installation and operation of those facilities.

(6) Developing and operating a common system of air traffic control and navigation for military and civil aircraft.

b. Title 49 U.S.C. chapter 447 of subpart III, part A, subtitle VII, prescribes the authority and powers of the FAA concerning safety regulations, including the issuance of air carrier and airman certificates, type certificates, production certificates, airworthiness certificates, and airport certificates. This chapter also prescribes the authority of the FAA to examine, investigate, and rate air agencies and air navigation facilities. In the case of air carriers, the statute is explicit on their responsibility for safety. Section 44702 of 49 U.S.C. states that the FAA Administrator, when issuing a certificate, shall consider the duty of an air carrier to provide service with the highest possible degree of safety in the public interest.

c. This doctrine also is based on FAA policy contained in FAA Order 1000.1A, Policy Statement of the FAA that states, in part, that "It is the statutory responsibility, and primary mission, of the Federal Aviation Administration to promote safety and to provide for the safe use of airspace."

2. Basis for Change and Responsibilities.

a. SMS closes the gap between the International Civil Aviation Organization's (ICAO) safety management requirements and current FAA capabilities. ICAO is a United Nations affiliated organization that is dedicated to increasing the safety and security of international civil aviation. The organization addresses fundamental issues ranging from air navigation and capacity to emerging environmental concerns such as engine noise and emissions. As a member of ICAO, the U.S has committed to comply with ICAO safety standards .

b. The Safety Risk Management Guidance for System Acquisition (SRMGSA) v1.4a in the FAST Toolset defines the scope, purpose, objectives, and planned activities of the FAA system safety effort as it applies to the safety management for all systems providing air traffic control and navigation services in the NAS as well as the acquisition of systems in support of NAS modernization.

c. The SMS will enable the FAA to adapt to changes and continuously improve safety in the air transportation system. This is done through an integrated, data-driven approach based on risk management in a system safety framework. The SMS will allow the FAA to address the highest risk concerns through a system of risk controls integrated across all FAA functions, with an efficient application of resources. This approach will permit the leveraging of resources through risk management and will focus on safety oversight of systems and processes. Direct observation and surveillance will still be required but they will be used differently than in the past. Rather than serving a quality control function, the results of surveillance will be used as objective evidence with which to evaluate the effectiveness of service providers' safety management capability and performance.

d. The responsibility for the safety of aviation products and services rests with the aviation product/service provider. The FAA responsibility is to set forth the safety regulations and system requirements for aviation product/service providers to follow. The FAA responsibilities include defining the requirements for those systems, applying risk-based lifecycle safety oversight, verifying that the safety systems of the aviation product/service provider meet design requirements and that their processes, products, and services continue to do so during the operational phases of their lifecycle. These oversight responsibilities are accomplished at multiple levels as discussed in Chapter 4.

e. Regulations will serve as risk controls, if correctly applied in the context of the unique operational environments of service providers. Rulemaking processes, therefore, should apply the concepts of safety risk management. They should identify hazards in the air transportation system and provide boundaries on acceptability of design and performance of products and services. Compliance with the regulations would thus move beyond viewing them only as administrative requirements and into an environment where compliance entails effective control of clearly identified hazards. This would enhance the value of regulations as effective instruments of safety management. Regulations and subsequent oversight activities must be part of a systematic strategy of risk control.

f. The FAA will allocate resources and conduct safety oversight using system safety principles. This approach recognizes that the statutory responsibility for safety rests with the aviation product/service provider. The FAA establishes safety and SMS requirements and, using a variety of means such as audits, evaluations, and inspections, verifies the aviation product/service provider's safety systems are compliant with requirements and validate the implementation and effectiveness of those safety systems. In this way, FAA personnel[1] will be used more efficiently, and there will be a higher level of confidence that an aviation product/service provider will meet safety standards for each operation, whether the FAA is present or not.

g. The SMS will enable the organization to respond to changing industry business models and growth, the air transportation system's increasing complexity, and the current and future challenging budget environment by allocating resources efficiently and effectively based on data-driven risk analysis and

[1] The term personnel includes FAA employees and designees, or others who might act on behalf of the FAA administrator.

assessment. The FAA will thus be able to provide the air transportation system and the public at large with—

(1) Enhanced safety;

(2) Better, innovative, more consistent, and more responsive service;

(3) Higher value; and

(4)World leadership in establishing aviation safety standards.

3. Safety and Quality.

a. Safety, like quality, is an emergent property of a system that is sometimes difficult to define, unlike more tangible characteristics like profit, costs, or products produced. It cannot be touched or seen and, therefore, cannot be directly managed. Quality also is a less tangible property. Rather than being an absolute, objective measure of "goodness," quality is relative to the requirements that are set for it. What may be "excellent quality" in one set of circumstances may be completely unacceptable in another. Therefore, if "high quality" is defined in terms of process or product characteristics that enhance safety, then safety and quality are congruent. However, if quality is defined in terms that do not promote safety (or, in some cases, may even be counter to safety) then they may be in conflict. The relationship between quality and safety, therefore, is very dependent on how the system's requirements are set.

b. Safety management and quality management are complementary and must work together to achieve the overall safety goals of the FAA. Aviation can never be entirely risk free. We must reduce risk to at least the acceptable level; as a secondary goal, we should reduce risk to as low as reasonably practicable. The primary requirement for an SMS is to establish a management system that has processes and procedures in place so operational safety is maintained at an acceptable level (safety management) and specified operational results are achieved (quality management).

4. Evolving Standards and Concept for Safety Management. Standards and concepts related to aviation safety management and safety management systems are evolving on an international level, at a U.S. national level and within the FAA. This doctrine and the standards and principles that evolve from the doctrine within the FAA organization will be aligned with those national and international standards and concepts.

a. Joint Planning and Development Office (JPDO). Vision 100—Century of Aviation Reauthorization Act (Public Law 108–176) created the JPDO to manage the work related to the development of the Next Generation Air Transportation System (NextGen), a vision of air transportation in 2025. Basic tenets described in the NextGen Integrated Plan include the following:

(1) Ensuring the future air transportation system will remain the world's safest form of transportation requires a new safety approach.

(2) Regulatory authorities must change their role from focusing on testing, inspecting, and certifying individual elements to focusing on approvals and audits of the safety management of aviation product/service providers.

(3) Safety needs to be embedded in all products, policies, or technologies. A comprehensive safety management doctrine will create high-level standards and procedures for the safety programs of aviation product/service providers and those that provide the associated safety oversight.

(4) Standards cannot be put in place without a data analysis capability to identify and resolve accident precursors.

b. International Civil Aviation Organization (ICAO).

(1) ICAO has proposed a standard for member States that includes the requirement for a State to have a safety program to achieve an acceptable level of safety in the operation of aircraft. The acceptable level of safety is to be defined by each State.

(2) One element of the ICAO program as it relates to Annex 11 (Air Traffic Services), Annex 14, Volume I (Airport Design and Operations), and potentially to Annex 6, Part I (International Commercial Air Transport—Airplanes) and Part III (International Operations—Helicopters), is for a State to require product/service providers to implement an SMS. Such an SMS is to be approved by the State.

c. FAA. This document establishes the internal SMS standard for FAA. The FAA SMS will provide most of the State safety program in the ICAO standards (excepting only the independent accident investigation function which is the responsibility of the NTSB). The SMS governs FAA internal procedures for regulation and safety oversight from the design of those procedures through their execution. The SMS will be based on a risk management approach that ensures an acceptable level of safety throughout the air transportation system. The SMS will also strive for effective safety oversight consistent with FAA authority, resources, and other practical constraints. The FAA will develop safety management standards and guidance for the producers of aviation products/services. Like the internal SMS standards, the external SMS standards and guidance will be flexible enough to accommodate effective safety management systems that are being developed or already in place.

Chapter 3. SMS Components

1. SMS Elements. The FAA SMS incorporates the essential elements of any SMS — be it a producer's SMS or the SMS of the regulator responsible for safety oversight. These essential elements provide for a systematic approach to achieving acceptable levels of safety risk. This section discusses these elements and the roles, responsibilities, and relationships within the air transportation system levels.

a. The four elements of an SMS are safety policy, safety risk management, safety assurance, and safety promotion.

(1) Safety Policy. The safety policy—

(a) Sets out what the organization is trying to achieve through its SMS.

(b) Outlines the requirements, methods, and processes the organization will use to achieve the desired safety outcomes.

(c) Establishes senior management's commitment and expectation that the organization will incorporate and continually improve safety in all aspects of the business and business processes. The safety policy further establishes senior management's expectation of high safety performance.

(d) Reflects management's commitment to implementing procedures and processes for establishing and meeting safety objectives that are measurable and attainable, and supports promotion of a culture of safety.

(2) Safety Risk Management.

(a) Safety risk management is used to assess system design and verify that it adequately controls risk; safety risk management is integrated into applicable processes. Validation of system performance and effectiveness of implemented risk controls and risk management strategies occurs under the safety assurance element, discussed below. A formal safety risk management process:

1. Describes the system of interest.
2. Identifies the hazards.
3. Analyzes the risk.
4. Assesses the risk.
5. Controls the risk.

(b) Safety risk management provides for initial and continuing identification of hazards and the analysis and assessment of risk. Appropriate risk controls or other risk management responses are developed and are employed operationally.

(c) FAA provides risk controls through activities such as the promulgation of regulations, standards, orders, directives, advisory circulars, and policies.

(3) Safety Assurance.

(a) The safety assurance process continually ensures risk controls achieve their intended objectives and assesses activity to identify new hazards throughout the system life cycle. New hazards may be those not identified during the Safety Risk Management process or those introduced by the risk controls. This includes assessment of the need for new risk controls or to eliminate or modify risk controls that are ineffective or are no longer needed due to changes in the operational environment. Every SMS includes a process for continuously monitoring systems of interest to assure that risk controls are being applied and working as intended as well as to identify new hazards or the need to change risk controls or other risk management responses. These monitoring activities apply to an SMS whether the operations are accomplished internally or outsourced.

(b) The safety assurance processes include:

1. Information acquisition.
2. Analysis.
3. System assessment.
4. Development of preventive/corrective action for nonconformance.

(4) Safety Promotion.

(a) Safety promotion includes the actions taken to create an environment where safety objectives can be achieved. The key objective is a positive culture of safety, characterized by an adequate knowledge base, competency, tools, communications, training, decision making, and information sharing. All levels of management will actively promote, and provide the leadership to ensure a positive culture of safety.

(b) A culture of safety is the product of individual and group values, attitudes, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's safety programs. In the desired safety culture, people acknowledge their accountability and act on their individual responsibility for safety. They trust, use, and rely on the organization's processes for managing safety. The environment is characterized by good communication between management and personnel, and people continue to learn and develop through training and coaching.

(c) Attributes of a positive culture of safety include, but are not limited to:

1. Competent personnel who understand hazards and associated safety risk, are properly trained, and have the skill and experience to ensure safe products/services are produced.

2. Individual opinion is valued within the organization and personnel are encouraged to identify threats to safety and to seek the changes necessary to overcome them.

3. An environment where people are encouraged to develop and apply their skill and knowledge to enhance safety.

4. Processes to analyze information from employees' reports, assess their content, develop actions as necessary and communicate results to the workforce and the public.

5. Effective communications, including a non-punitive environment for reporting safety concerns.

6. There are clear standards of behavior where there is a commonly understood difference between acceptable and unacceptable actions.

7. Adequate resources to support the commitment to safety.

8. A process for sharing safety information to develop and apply lessons learned with regard to hazard identification, safety risk analysis and assessment, safety risk controls, and other safety risk management responses. Sharing of information related to corrective actions, and results of management reviews is encouraged.

9. Safety is a core value of the organization that endures over time, even in the face of significant personnel changes at any level.

10. Willingness to recognize when basic assumptions should be challenged and changes are warranted – an adaptive and agile organization.

11. Decisions are made based on knowing the risk involved in the consequences of the decision.

Chapter 4. Roles, Responsibilities, and Relationships within the SMS Levels.

1. Roles, responsibilities, and relationships will vary depending on whether the SMS is dealing with:

a. The air transportation system;

b. Organizational product and service providers; or

c. Individuals who independently provide aviation services or operate in the air transportation system.

2. System Levels. In determining the nature of the FAA relationship to the air transportation system and its components, the FAA considers three basic levels of the system. These levels should not be viewed rigidly, but rather as a continuum intended to describe the system for purposes of determining how the SMS interacts with and manages safety in the system in different ways. Each SMS implementation plan (see chapter 5) must address how it will function throughout the three levels described here.

a. National Air Transportation System Level.

(1) At the highest, collective level of the national air transportation system, the FAA has responsibility for safety management. At this level, the FAA tracks hazards and develops a comprehensive view of trends, measuring high-level system design and performance. Safety risk management and safety assurance activities include analyzing FAA regulations, policies, and standards to determine the effectiveness of these key risk management and risk control tools. The FAA may analyze the overall system as well as major segments such as the:

(a) NAS, including the airport and air traffic management infrastructure and system;

(b) Commercial aviation system, including air transport aircraft and engine manufacturers, air carriers, and maintenance organizations; and

(c) General aviation system, including aircraft and engine manufacturers, operators, and maintenance organizations.

b. Organizational Level.

(1) In the middle level of the air transportation system, aviation product/service providers operate as organizations. These are primarily certificate holding corporate entities such as design or production approval holders, air carriers, maintenance organizations, airport users, and ATO, even though ATO does not hold a certificate.

(2) FAA interactions with the aviation product/service providers at this level are managed through certification and surveillance of technical personnel and, importantly, through interfaces at the organizational level with the product/service providers. The nature of the FAA safety oversight may vary depending on the size, scope, and sophistication of the organization's safety risk management processes.

(3) At this level, aviation product/service providers are more likely to implement an SMS. If the aviation product/service provider has implemented an SMS, the FAA role is to ensure the SMS is comprehensive and functioning properly to enable the aviation product/service provider to appropriately manage its safety risk. FAA safety assurance is an additional level of protection to the aviation product/service provider's safety assurance. The FAA field elements use design and performance assessments to verify the aviation product/service provider's SMS. Inspections, audits, and evaluations are conducted to provide objective evidence to assess service provider process and product design adequacy, safety management performance, and continuing operational safety.

(4) As SMS matures in the industry, the SMS will increasingly be able to leverage its safety risk management and safety assurance with each product/service provider SMS. Safety oversight increasingly will evolve from checking for basic regulatory compliance to more in-depth analysis of SMS performance, process design, and organizational safety attributes.

(5) The SMS and the aviation product/service provider's SMS share objectives and perhaps even tools and activities, but the responsibilities of the aviation product/service provider and the aviation authority (safety oversight) remain distinct. The aviation product/service providers have the legal and functional primary responsibility for safety management in their activities. FAA's job as regulator is not specifically to reduce risk of a product or service but to determine the capability of the producer organization to reduce risk of a product or service.

c. Individual Level.

(1) The most basic level of the air transportation industry comprises the individual participants and aircraft that are certificated, authorized, or otherwise directly controlled through the FAA safety oversight process.

(2) In many cases, such as general aviation, these individuals' primary interface with FAA is through such FAA functions as certification, surveillance, or safety promotion. Such individuals are responsible for their primary safety risk management, although it may be informal and minimally , if at all, documented. As individual operators, they do not participate in a comprehensive SMS unless it is through an organization in the air transportation system's middle level. The FAA role is primarily one of safety oversight of performance and safety promotion rather than design and implementation of systems.

3. FAA Safety Oversight. FAA implements safety management through safety oversight of aviation product/service providers, whether they are single-person operations or large organizations. FAA conducts analysis of the aviation system as a whole and promulgates regulations, standards, orders, and policies. These have been FAA's primary safety oversight tools for managing safety risk in the air transportation system. FAA also carries out safety oversight activities of certification and surveillance of aviation product/service providers, both individuals and organizations, to verify their compliance with regulations, standards, and policies, and ensure they fulfill their direct safety management responsibilities.

4. FAA Activities. Under the SMS, FAA will conduct its activities using data-driven risk management and system safety principles to allocate FAA resources for safety oversight of the air transportation system and its components. FAA safety risk management and safety assurance include processing and analyzing internally and externally developed data, identifying hazards and analyzing risk directly related to FAA safety oversight processes and actions, and internally and externally conducting audits of SMS activities.

5. FAA Safety Risk Management. FAA conducts safety risk management throughout the levels of the air transportation system for the purpose of managing safety at the high level. Here, the FAA implements risk management strategies of regulations, standards, and policy. At no point is the FAA, in an oversight capacity, responsible for primary safety assurance or for performing safety risk management for an individual or organizational aviation product/service provider. When an FAA organization is performing in the capacity as a product/service provider, such as ATO, then they are responsible for primary safety assurance and safety risk management. FAA performs safety assurance activities to assure the safety management capability and performance of service providers' systems. Under certain circumstances, such as Federal financial participation in airport development projects, FAA will coordinate safety risk management activities with airports to ensure that both party's safety risk management responsibilities are completed in a complementary manner.

6. Product/Service Providers. Aviation product/service providers are responsible for managing safety for their operations. They control resources and activities of people directly exposed to hazards and are in a position to directly control risk related to those hazards. They have responsibility for managing safety of their operations. Depending on the nature of the aviation product/service provider, the provider may manage safety by means of an SMS. The SMS constitutes a systematic method through which the aviation product/service provider directly manages the safety risk of its operation.

Chapter 5. Application and Execution

1. Integration of the SMS. The SMS must be implemented in an integrated manner. SMS will integrate the approach for conducting and overseeing regulatory and safety oversight functions at the FAA level. It will also increase efficiency and eliminate duplication of efforts within the FAA. Although some FAA organizational elements have more direct involvement in safety oversight than others, all must understand and operate consistent with the principles and requirements in this Order. The FAA overall objective is to conduct safety oversight in a consistent and efficient manner, sharing information and minimizing duplication. We will do this in a manner consistent with system safety principles and concepts and will serve as a model for international and national policy. This paragraph describes the scope and characteristics of such integration and provides guidance on how the FAA will approach the integration process.

a. Basic Requirement and Purpose.

(1) The SMS will be an integrated system, with integration accomplished across the FAA. Integration must be accomplished across the organizational elements of the FAA to ensure safety management throughout a product or service life cycle and in all areas of the aviation system, including:

(a) Design of aircraft and components.

(b) Manufacture of aircraft and components.

(c) Operation of aircraft.

(d) Maintenance of aircraft and components.

(e) Management of air traffic.

(f) Training and qualification of personnel.

(g) Development and maintenance of the aviation system infrastructure.

(h) Promulgation of standards through regulation and guidance materials.

(2) Integration must provide for analysis of the entire air transportation system, such as commercial aviation, general aviation, any given operator, manufacturer, or individual certificate holder. Regulations, being the principal high-level tool for risk management, will be based on comprehensive analysis of the entire air transportation system and the associated risk.

(3) Throughout the FAA, there must be:

(a) A common definition and understanding of risk.

(b) A consistent process for analyzing and assessing risk associated with a hazard.

(c) Common risk management techniques.

(d) Consistent safety assurance procedures.

(e) A common approach to establishing acceptable levels of risk.

(f) A common auditing process to assure that the SMS requirements are being met across the agency.

b. Methodology.

(1) Integration will be achieved through unified goals, strategies, and outcomes. The goals of the FAA must support the goals of the FAA SMS as a whole. Strategies to achieve those goals must address risk management in a coordinated fashion, and the common desired outcome of managing risk to an acceptable level must remain the focus for all FAA organizational elements and individuals.

(2) Integration will be accomplished by:

(a) Establishing a strong and continuously improving culture of safety.

(b) Continuously verifying we have consistent and compatible values, norms, and assumptions by establishing procedures and programs for auditing the SMS performance of the internal FAA organizations.

(c) Identifying the knowledge, skills, and abilities needed by our personnel to support the SMS.

(d) Developing and providing the training at all levels needed to understand and implement the doctrine contained in this Order.

(e) Maintaining an effective communication process at all levels and between levels. Our goals, strategies, and desired outcomes must be understood at all levels of the FAA. All FAA personnel, from headquarters to the field levels, administrative to technical, are integral to the continued success of FAA safety oversight responsibilities.

(f) Ensuring there is a functioning process for obtaining the maximum benefit from lessons learned as they relate to the operation of the SMS.

c. Information Sharing.

(1) Essential to the success of the SMS is a support system for information collection, analysis, and sharing. We must identify and communicate common or related hazards, as well as ideas for managing the associated risk to acceptable levels. The SMS will have at the air transportation systems level a common hazard tracking system, accessible to all FAA personnel. We must identify common elements of safety oversight standards, procedures, and analysis and avoid duplication. We must avoid overlapping or redundant data collection or inspection processes to minimize the adverse impact on aviation product/service providers and to optimize the use of FAA resources.

(2) A key aspect of this information sharing is to continue integrating FAA information technologies systems so that data and information flows vertically and horizontally, enabling headquarters-level policymakers, decision makers, regional offices, and field offices of the various services/offices to adopt a uniform approach based on a complete picture.

(3) Decision-making processes must consider the potential impact on all other FAA organizations. The SMS architecture must be clearly defined and it must identify integration points within and between our organizational elements and others. We must ensure our processes have built in the requirement to consider the need to share information or seek participation.

2. Implementation.

a. Safety Management System Committee.

(1) This committee shall provide assistance to FAA organizations for safety management system implementation and planning. It will meet at regular intervals of once a quarter and at the discretion of the committee chair person to exchange SMS information. The charter of this committee will expire on the anniversary date of this Order unless extended by the Associate Administrator for Aviation Safety. Extensions will be reviewed annually.

(2) Responsibilities. The Committee provides advice and guidance to the responsible program offices, to help them fulfill their authority and responsibility to incorporate the SMS. It serves as a forum for discussion of safety policy, safety risk management, safety assurance and safety promotion across all member organizations.

(3) Composition. The SMS Committee is composed of SMS professionals from each Line of Business (AVS, ATO, ARP, AST) and other organizations as required. The Associate Administrator for Aviation Safety will designate an individual to chair the committee. The chairperson is responsible for providing written notice of all meetings to committee members and, in coordination with the executive secretary, keeping minutes of the meetings. The Air Traffic Organization shall provide the position of executive secretary of the committee.

(4) Assignments. The SMS Committee may form ad hoc working groups to address specific issues related to implementing SMS throughout the FAA. Composition of those working groups will consist of member representatives as required from across the FAA. Working groups will be disbanded upon completion of their task.

(5) Funding. Resources for support staff and working group activities will be provided as determined by the Associate Administrator for Aviation Safety. Unless otherwise stated, each member's organization is responsible for his/her own costs associated with committee membership.

b. Implementation Plans.

(1) Each organization that has safety responsibility within the national airspace system will implement this doctrine using the guidelines and principles in this Order. Each will develop and document an implementation plan for the SMS that is consistent with this order. These plans will address how each FAA organization will meet the criteria discussed below, including performance measurements in developing and achieving its safety management goals. Each plan must be coordinated with other plans throughout the development process and must include a consistent integrated method for measuring the performance and effectiveness of the SMS. Each plan must also show how the SMS will incorporate or otherwise account for existing safety programs, related orders, and advisory material. In addition, each plan must address the following:

(a) Program schedule.

(b) Change management, including leadership actions describing the transformation of the service/office to enable operation of the SMS.

(c) Clearly defined responsibility and authority for implementation and integration of the SMS into the service/office business functions.

(d) Overall goals, strategies and objectives for managing safety.

(e) Identification of internal and external stakeholders.

(f) Resources to fully implement the SMS including the four components of the SMS, including provisions for SMS audits at the FAA level as well as within FAA component organizations.

(g) Establishment of an acceptable level of risk in the system of interest.

(h) Acquisition and analysis of data to make risk-based safety risk management decisions.

(i) Identification of critical process steps and development of internal controls for those critical process steps.

(j) Development of a means to measure performance of the SMS including establishing performance measures and metrics and adapting the SMS as necessary.

(k) Well-defined internal and external FAA interfaces to ensure proper coordination, communications, and data and information flow horizontally and vertically.

(l) Development of SMS requirements and guidance for the product/service provider that is overseen.

(m) A means to measure and track SMS implementation progress.

(n) Development of an FAA Enterprise Architecture, including a Safety Information Architecture, depicting and implementing the FAA Safety Management System Doctrine.

Chapter 6. Administrative Information

1. Distribution. This Order is distributed to the division level in the Washington headquarters, regions, and centers, with limited distribution to all field offices.

Apendix A. Key Terms and Glossary

1. Purpose of This Appendix. One of the principal purposes of this Order is to standardize the use of certain terms and concepts. As system safety has evolved within the FAA and industry, there has been some variation in the understanding of safety program elements and safety-related terminology. To some extent, this is appropriate because of the different applications of those terms; however, there are basic tenets and definitions that shall be the same throughout FAA to ensure effective communications throughout FAA organizations and industry. This appendix presents (1) a discussion of key terms for which a common understanding is necessary to the successful implementation of the SMS, and (2) a glossary of terms.

2. Key Terms.

a. Safety Responsibilities.

(1) The responsibility to comply with 14 CFR to establish and maintain processes, procedures, and management oversight adequate to ensure regulatory compliance and ultimately safe operations rests with aviation product/service providers, not the FAA. The SMS is not a substitute for an aviation product/service provider's quality control or quality assurance.

(2) FAA, acting as a safety advocate, will continue to enhance safety through setting the standards for managing safety within the industry by directing the implementation of SMS. FAA responsibilities include:

(a) Assessing and mitigating safety risk across the air transportation system;

(b) Setting standards for control of safety risk of the regulated entities' products and services;

(c) Prescribing and enforcing minimum standards, including regulations;

(d) Issuing recommended practices; and

(e) Validating aviation product/service providers and other air transportation product or service providers have processes in place that ensure continuous safe operations.

(3) FAA accomplishes this through integrated, coordinated safety functions across its Services and Offices, including integrated data and information systems. FAA will implement a systems-oriented approach for all its functions that increases the efficiency of FAA resources through risk management. Many of the techniques and the information used are the same for the FAA and for the producers; however, responsibilities are different, and objectives, though overlapping in part, also are different.

b. System Safety Attributes.

(1) One of the tools the FAA will use to analyze the systems used to produce and to manage aviation products and services is the comparison of those systems to the basic characteristics of all effective safety systems. These characteristics are embodied in the following attributes:

(a) Well-defined and well-documented procedures

(b) Risk controls over key procedural steps

(c) Process measures to permit effective management

(d) Well-defined interfaces

(e) Clear responsibility and authority

(2) Additional details as to how each attribute shall be evaluated depend on the application and will vary. However, the basic system attributes listed above are applicable to, and will guide, all FAA safety oversight. The objective is to achieve continual improvement in the systems and in safety.

c. Safety Management System. An SMS is an integrated collection of processes, procedures, and programs that ensures a formalized and proactive approach to system safety through risk management. Risk analysis is required for all activities or process changes to identify safety impacts. The SMS is a closed-loop system ensuring corrective actions or process changes are documented and all problems or issues are tracked to resolution.

d. Safety and Risk. For practical purposes, it is most useful to define safety as a level of risk in a specified activity that is understood and acceptable. If a risk in a specific activity is considered unacceptable, then the activity is unsafe. If the risk of an activity has been analyzed, and the analysis indicates that all reasonable risk controls have been implemented and that any remaining risk is acceptable, then the activity is considered safe.

e. Safety and Quality Systems. Safety systems can be considered a type of quality system. A quality system is designed to consistently meet whatever quality objectives have been identified in a particular instance. This Order focuses on an integrated safety system and addresses safety management and safety oversight. Consistent quality may or may not be synonymous with high quality, because high quality may have an unacceptable cost in a particular context. However, unlike quality management systems (ISO 9000) that may be focused on financial objectives, customer satisfaction, or other goals, the SMS is a quality system focused on regulatory oversight and safety risk management. In the case of aviation safety, high quality is the only acceptable outcome. The SMS is completely compatible with the operations under the ISO standard.

f. Safety Program and Oversight System.

(1) The safety program is a concept developed by ICAO to describe an integrated set of regulations and activities aimed at improving safety. ICAO standards and recommended practices require that States establish a safety program to achieve an acceptable level of safety in aviation operations. Each State establishes the acceptable level of safety. The SMS meets the intent of the

ICAO safety program for those aviation activities under FAA purview, including airports, aircraft operations, air traffic services, and aircraft maintenance.

(2) ICAO describes the safety program as including provisions for an array of activities, including incident reporting, safety investigations, safety audits, and safety promotion. A coherent SMS is required to implement such safety activities in an integrated manner.

(3) The authority's safety oversight is required to ensure compliance with obligations under the ICAO standards and recommended practices addressing the following critical elements of a safety oversight system:

(a) Primary aviation legislation

(b) Specific operating regulations

(c) State civil aviation system and quality oversight functions

(d) Technical personnel qualification and training

(e) Technical guidance, tools, and the provision of safety-critical information

(f) Licensing, certification, authorization, and approval obligations

(g) Surveillance obligations

(h) Resolution of safety concerns

3. Glossary.

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

b. Air transportation system. The entirety of the aviation system, including the FAA; entities that design, manufacture, or operate aircraft or components of aircraft; training entities; people; infrastructure; and other systems and subsystems.

c. 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 until such time as all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage.

d. Aircraft incident. An occurrence other than an accident, associated with the operation of an aircraft, that affects or could affect the safety of operations.

e. Audit. A systematic, independent and documented process for obtaining records, statements of fact or other information and evaluating it objectively to determine the extent to which policies, procedures or requirements are met.

f. Continual improvement. Recurring activity to increase the ability to fulfill requirements in response to ongoing system feedback. Continual improvement can be achieved by carrying out internal audits, performing management reviews, analyzing data, and implementing corrective and preventive actions.

g. Doctrine. A statement of fundamental government policy.

h. Effectiveness. A measure of how well desired outcomes are achieved, generally in reference to a specified standard. Effectiveness in a safety management system (SMS) refers to the results of risk management activities in terms of the applicable standard and the intended results.

i. Fail safe. A characteristic of a system whereby any malfunction affecting the system safety will cause the system to revert to a state that is known to be within acceptable risk parameters.

j. Hazard. Any existing or potential condition that can lead to injury, illness, or death to people; damage to or loss of a system, equipment, or property; or damage to the environment. A hazard is a condition that is a prerequisite to an accident or incident. Note that a hazard may or may not result in a situation of high risk.

k. Incident. An event or occurrence other than an accident that is relatively minor that could cause interruption or crisis.

l. Likelihood. The estimated probability or frequency, in quantitative or qualitative terms, of a hazard's effect.

m. National Airspace System. The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information services; rules, regulations and procedures, technical information, and manpower and material. Included are system components shared with the military.

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

o. Process. A set of interrelated or interacting activities that transforms inputs into outputs.

p. Quality assurance. The part of quality management focused on providing confidence that requirements will be fulfilled.

q. Quality control. Part of quality management focused on fulfilling quality requirements.

r. Quality management. Coordinated activities to direct and control an organization with regard to quality.

s. Quality management system. A management system to direct and control an organization with regard to quality.

t. Quality system. The organizational structure, responsibilities, procedures, processes, and resources for implementing quality management.

u. Risk. The composite of predicted severity and likelihood of the potential effect of a hazard in the worst credible system state. There are three types of risk:

(1) Initial — The severity and likelihood of a hazard when it is first identified and assessed; includes the effects of preexisting risk controls in the current environment.

(2) Current — The predicted severity and likelihood of a hazard at the current time.

(3) Residual — The remaining risk that exists after all risk control techniques have been implemented or exhausted and all risk controls have been verified.

v. Risk analysis. The process whereby hazards are characterized for their likelihood and severity. Risk analysis looks at hazards to determine what can happen when. This can be either a quantitative or qualitative analysis. The inability to quantify and/or the lack of historical data on a particular hazard does not exclude the hazard from the need for analysis. Some type of a risk analysis matrix is normally used to determine the level of risk.

w. Risk assessment. The process by which the results of risk analysis are used to make decisions. The process of combining the impacts of risk elements discovered in risk analysis and comparing them against some acceptability criteria. Risk assessment can include the consolidation of risks into risk sets that can be jointly mitigated, combined, and then used in decision-making.

x. Risk control. Anything that mitigates risk. A risk control should directly map to a safety design requirement. All risk controls must be written in requirement language.

y. Safety. The state in which the risk of harm to persons or property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management. It is a level of risk that is acceptable.

z. Safety assurance. SMS process management functions that systematically provide confidence that safety objectives are met or exceeded.

aa. Safety culture. Safety culture is descriptive of organizations where each person involved in the organization's operations recognizes and acts on his or her individual responsibility for safety, and actively supports the organization's processes for managing safety. The outcome is that the organization's ability to manage safety continues to improve because decision makers at all levels work to use their knowledge of safety risk to learn and adapt, thus improving the system's ability to support safety outcomes.

bb. Safety management. The act of understanding and making decisions and taking actions to lower risk, inherent in all human activity, to acceptable levels.

cc. Safety management system. An integrated collection of processes, procedures, and programs that ensures a formalized and proactive approach to system safety through risk management. Risk analysis and assessment are required for all changes to identify safety impacts. The SMS is a closed-loop system ensuring all changes are documented and all problems or issues are tracked to conclusion. When properly implemented, an SMS establishes a safety philosophy or culture that permeates the entire organization in the monitoring and continuous improvement of safety of the operation.

dd. Safety oversight. A function by means of which States ensure effective implementation of the safety related laws, regulations, policies, and procedures. Safety oversight also ensures the national aviation industry provides a safety level equal to or better than the acceptable level defined by the State.

ee. Safety Promotion. Communication and dissemination of safety information to strengthen the safety culture and support integration of the SMS into operations.

ff. Safety risk management. A process within the SMS composed of describing the system, identifying hazards, and analyzing, assessing, and controlling the risk.

gg. Serious injury. Any injury which:

(1) Requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received;

(2) Results in a fracture of any bone (except simple fractures of fingers, toes, or nose);

(3) Causes severe hemorrhages, nerve, muscle, or tendon damage;

(4) Involves any internal organ; or

(5) Involves second or third degree burns, or any burns affecting more than 5 percent of the body surface.

hh. Severity. The consequence or impact of a hazard in terms of degree of loss or harm.

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

jj. Surveillance. The act of monitoring and evaluating an organization, product, or service in a systematic way to verify compliance with regulations; operation in accordance with their systems and methodologies; and that the desired outcome is achieved or product or service performance meets expectations.

kk. System. An integrated set of constituent pieces combined in an operational or support environment to accomplish a defined objective. These pieces include people, equipment, information, procedures, facilities, services, and other support services, which interact.

ll. System engineering. A discipline that concentrates on the design and application of the whole (system) as distinct from the parts. It involves looking at a problem in its entirety, taking into account all the facets and all the variables, and relating the social to the technical aspect. The translation of operational requirements into design, development, and implementation concepts and requirements in the lifecycle of a system.

mm. System safety. The application of engineering and management principles, criteria, and techniques to optimize all aspects of safety within the constraints of operational effectiveness, time, and cost throughout all phases of the system lifecycle.

nn. System safety engineering. An engineering discipline requiring specialized professional knowledge and skills in applying scientific and engineering principles, criteria, and techniques to identify and eliminate hazards, in order to reduce the associated risk.

oo. System safety management. A management discipline that defines system safety program requirements and ensures the planning, implementation, and accomplishment of system safety tasks and activities are consistent with the overall program requirement.