

Overview of Safety Management Systems

Participant Guide

Video: Overview of Safety Management Systems

Video Section	Key Points Made	Your Notes
Introduction	<ul style="list-style-type: none"> • As today's aviation systems become more complex and global, both aviation businesses and government entities must continually evaluate the safety strategies of the future. • In 2006, ICAO published requirements for air operators and aviation maintenance organizations to establish safety management systems (SMSs) so that their safety strategies and practices are managed just like any other business objective. ICAO Annex 6 requires member states to have requirements for SMSs in place as of January 1, 2009. • The FAA is a proponent of safety management systems and intends to implement this requirement. In June of 2006, the FAA published an advisory circular (AC 120-92) to introduce the concept of safety management systems and provide guidance for their development. • Because businesses and governments must work cooperatively to manage safety, AVS is also implementing its own safety management system, known as the AVSSMS. This internal SMS will help with oversight responsibilities by providing a process-orientated approach that emphasizes management systems to manage risk and assure safety. You will learn more about the internal safety management system in the future. • Risk is inherent in all aviation service provider organizations. It results from the environment and operational activities. • Under Title 49, certificate holders are responsible for identifying risk in their operating environments and managing it to an acceptable level. 	

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Introduction (continued)	<ul style="list-style-type: none">• A safety management system will not eliminate hazards and risks. Instead, it provides certificate holders with a systematic way to control the risk in their environments and assure that risk controls are effective.• The video covers:<ul style="list-style-type: none">○ What safety management systems are and why they are important○ FAA's SMS standard○ The two primary elements of FAA's standard -- safety risk management and safety assurance○ The relationship of safety management systems and FAA's oversight systems	

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<p>What is a Safety Management System, and Why is It Important?</p>	<ul style="list-style-type: none"> • A safety management system is a formal, top-down business-like approach to managing safety risk. It includes systematic procedures, practices, and policies for the management of safety. • An SMS is a tool for a certificate holder to assess their systems, identify hazards in those systems, and develop risk controls in those systems. • An SMS also provides operators with a safety assurance system, which is a means of assuring those risk controls continue to be effective. • An SMS is important because it provides both safety benefits and business benefits <ul style="list-style-type: none"> ○ The safety benefits include providing management with: <ul style="list-style-type: none"> ▪ A quality management approach to identifying hazards and controlling risk ▪ An organizational framework to support a sound safety culture ▪ A detailed roadmap for monitoring the effectiveness of safety-related processes ○ The business benefits include: <ul style="list-style-type: none"> ▪ Providing the best way of meeting every customer's primary demand – a safe product or service ▪ Financial benefits and better products as a result of added emphasis on assuring consistency and process management ▪ Reduced inefficiencies as a result of integration of safety into the business model; including integration with other systems such as quality, occupational safety and environmental control systems ▪ Continuous improvements reduce costs and waste and provide additional financial gains 	<p><i>Listen for the benefits of an SMS.</i></p>

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What is a Safety Management System, and Why is It Important? (continued)	<ul style="list-style-type: none">• Safety management systems are built on two key principles: safety risk management and safety assurance• Safety risk management focuses on designing operating systems so that hazards are identified and associated risks are controlled. This involves assessing systems, their mission, what hazards might be byproducts of that mission, and putting risk controls into action.• Safety assurance focuses on auditing operating systems to ensure continuous effective performance and conformance with requirements.• These core functions are supported by a positive safety culture. A safety culture consists of how people think, how they act, and organizational elements such as mission goals and performance measures. A positive safety culture supports the safety risk management system in achieving the intended goals.• AC 120-92 explains these concepts in more detail and provides guidance for U.S. aviation service providers.	

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<p>Overview of FAA's SMS Standard</p>	<ul style="list-style-type: none"> • Why the standard? When aviation service providers use the standards set in AC 120-92 to develop their safety management systems, it creates a common language and framework across domestic and international aviation service providers and oversight organizations. • How will air carriers use it? The standard describes “what” the safety management system must do, but not “how” to accomplish it. It is applicable to a wide variety of types and sizes of aviation service providers – allowing them to integrate safety management practices into their unique business models. While it allows flexibility in how service providers configure their systems, it assures functional standardization of essential safety management processes. • There are seven clauses in the standard. The first three clauses describe scope and applicability, references, and definitions. • The remaining four clauses (clauses 4-7) describe four components that are essential for safety management systems. Known as the four “pillars,” they are: <ul style="list-style-type: none"> ○ Clause 4 – Policy: All management systems must define policies, procedures, and organizational structures to accomplish their goals. Clause 4 outlines the requirements for these elements, which form the framework for the SMS functions. ○ Clause 5 – Safety risk management: This is a formal system of hazard identification, risk analysis, and risk assessment, which is essential in controlling risk to acceptable levels. Clause 5 presents a safety risk management process, which is derived from FAA's system safety process model. 	<p><i>Listen for the four essential components of an SMS, including the two that are the “heart” of an SMS.</i></p>

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Overview of FAA's SMS Standard (continued)	<ul style="list-style-type: none"><li data-bbox="415 199 1157 394">○ Clause 6 – Safety assurance: This function ensures that the risk controls are continuously practiced and remain effective when the environment changes. Clause 6 presents a safety assurance process, which is based on quality management concepts and processes.<li data-bbox="415 407 1157 573">○ Clause 7 – Safety promotion: This consists of the practices the aviation service provider has in place to promote safety as a core value and to support a sound safety culture. Clause 7 provides guidance for setting up these functions.<li data-bbox="373 586 1115 678">● Of the four components, safety risk management and safety assurance represent the heart of a safety management system.	

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<p>A Closer Look at Safety Risk Management (Clause 5)</p>	<ul style="list-style-type: none"> • Safety risk management is a process for examining the operating environment for hazards, analyzing the associated risk, and identifying controls to address the risk. It includes five steps: <ul style="list-style-type: none"> ○ Analyze systems and tasks ○ Identify hazards ○ Analyze safety risk ○ Assess safety risk ○ Control safety risk • To see how the safety risk management process works, let's look at how an operator can design its new system by following the safety risk management process in the FAA standard: <ul style="list-style-type: none"> ○ Step 1 – Systems and Task Analysis: First, describe the new systems in terms of the processes, procedures, people, equipment, and other organizational resources required for the system to work properly. Second, consider how the new system will interact with its other operating systems, such as: <ul style="list-style-type: none"> ▪ Flight operations ▪ Dispatch/flight following ▪ Maintenance and inspection ▪ Cabin safety ▪ Ground handling and servicing ▪ Cargo handling ▪ Training 	<p><i>Listen for what a certificate holder does during the first step of the safety risk management process when implementing a new system and why this first step is important.</i></p>

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<p>A Closer Look at Safety Risk Management (Clause 5) (continued)</p>	<ul style="list-style-type: none"> ○ Step 2 – Hazard identification: Certificate holders are expected to exercise due diligence in identifying, documenting, and controlling hazards in their operating environment. A thorough system and task analysis facilitates this step. ○ Step 3 – Risk analysis: The hazards are analyzed in terms of any existing safety risk controls, triggering mechanisms, and the likelihood and severity of an undesirable outcome resulting from the hazard. After identifying the hazards, look for potential consequences of the hazards. ○ Step 4 – Risk assessment: Determine whether the risks associated with the identified hazards are acceptable. When a risk is determined to be unacceptable and that risk is not already addressed through regulation, the certificate holder would design an intervention to either: <ul style="list-style-type: none"> ▪ Eliminate the associated hazards, or ▪ Control the factors that lead to higher likelihood or severity <p>The certificate holder would identify how to reduce the risk to an acceptable level.</p> ○ Step 5 – Control Safety Risk: The safety assurance process (Clause 6) helps the operator determine if these procedures are adequate for controlling the risk or if there are additional hazards, risks, or controls that must be built into its system. 	<p><i>Listen for examples of risk controls.</i></p>

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<p>A Closer Look at Safety Assurance (Clause 6)</p>	<ul style="list-style-type: none"> • Safety assurance is the function in the safety management system that makes sure that the risk controls are effective in maintaining risk within acceptable levels. It also provides a basis for continuous improvement. There are four steps: <ul style="list-style-type: none"> ○ Acquire data about the organization's operational processes and the SMS. Data acquisition methods include continuous monitoring, internal and external audits, investigations, and employee reporting. ○ Analyze the data and determine if the risk controls in place are effective, as well as identify new risks. ○ Assess the system for performance and effectiveness of risk controls. ○ Initiate preventive/corrective action, if required. • The safety risk management process should be followed when a certificate holder initiates a new program, introduces new equipment, revises an existing program, or identifies a new hazard. The results of the safety risk management process are controls that address the identified risks. • The safety assurance process should be an ongoing part of every program to ensure the safety controls are effective. An effective safety assurance process considers data from the system being assessed as well as all interfacing systems; and collects data from multiple sources. • The implementation of these two SMS processes provides management with a systematic approach to controlling risk and managing safety. 	<p><i>Listen for:</i></p> <ul style="list-style-type: none"> • <i>The purpose of the safety assurance process.</i> • <i>Methods certificate holders can use to acquire information.</i> • <i>Next steps based on the results of the system assessment.</i>

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<p>The Relationship Between SMS and FAA Oversight</p>	<ul style="list-style-type: none"> • Safety management systems provide certificate holders with a systematic approach for managing safety. The processes of safety risk management and safety assurance are the certificate holder's responsibility. • The FAA is responsible for providing oversight to assure that certificate holders meet these responsibilities. • The systems-based nature of safety management systems is an important complement to FAA's system for safety-based oversight (ATOS). • A certificate holder's safety risk management process and the FAA's design assessment process are complementary: <ul style="list-style-type: none"> ○ In the safety risk management process, the certificate holder designs controls to manage the hazards in their operating environment. These risk controls become the part of their program that assures that they have addressed the hazards in their operating environment. Other aspects of their program design assure that their program meets regulatory requirements. ○ One of the key FAA oversight functions is assessing the certificate holder's program design to ensure that it meets the regulatory requirements and addresses the hazards in the operating environment. This assessment results in either program approval (in the case of initial certification) or continued approval (in the case of certificate management). 	

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The Relationship Between SMS and FAA Oversight (continued)	<ul style="list-style-type: none"> • Likewise, a certificate holder's safety assurance process and the FAA's performance assessment process are complementary: <ul style="list-style-type: none"> ○ In the safety assurance process, the certificate holder confirms that the risk controls are performing as intended and are effective. These risk controls must be analyzed in the context of all parts of the certificate holder's system, resulting in an assessment of how well the system is performing. ○ Another key FAA oversight function is assessing the certificate holder's program to ensure that it is performing as designed – for example that the procedures and controls are being followed – and that it is achieving the intended result, a bottom line assessment of the system's performance. 	
Conclusion	<ul style="list-style-type: none"> • AC 120-92 outlines a standard for safety management systems. • An SMS provides a structured framework for integrating the requirement to identify hazards and control associated risk with the certificate holder's unique operating environment. • Implementing the SMS will complement other established management practices; such as continuous analysis and surveillance systems, quality management systems, and internal evaluation programs. • The structured nature of an SMS is also a better interface with FAA oversight functions. 	