VOLUME 17 SAFETY MANAGEMENT SYSTEM

CHAPTER 1 GENERAL

Section 1 Safety Management System

Source Basis:

- **Title 14 CFR § 5.3, Definitions.**
- **Title 14 CFR § 5.73, Safety Performance Assessment.**
- **Title 14 CFR § 5.75, Continuous Improvement.**
- **Title 14 CFR § 5.95, SMS Documentation.**

17-1-1-1 GENERAL.

A. Purpose. This volume explains the policy, concepts, principles, roles and responsibilities, and definitions for a Safety Management System (SMS), as required under Title 14 of the Code of Federal Regulations (14 CFR) part 5. This volume augments guidance found in the certification and major change processes contained in Volumes 2 and 10. This volume provides guidance to inspectors for planning, observing, and evaluating an operator's SMS.

B. Background. In 2015, the Federal Aviation Administration (FAA) published 14 CFR part 5, which required 14 CFR part 121 certificate holders (CH) or applicants to implement an SMS. Title 14 CFR part 5 harmonizes U.S. requirements for entities implementing an SMS requiring State acceptance with International Civil Aviation Organization (ICAO) Annex 19, Safety Management. The May 2024 amendment to 14 CFR part 5 requires 14 CFR part 135 and 14 CFR § 91.147 commercial air tour operators with a Letter of Authorization (LOA) to develop and implement an SMS in their organization.

C. Scope. This volume applies to all existing and new applicants required to develop and implement an SMS as required by 14 CFR part 5 and for those aviation organizations seeking to receive FAA acknowledgment of their voluntarily implemented SMS.

1) The term "single pilot/sole individual" should be considered the same as a single individual of an aviation organization (e.g., mechanics or repair stations conducting aircraft maintenance).

2) Single-pilot operations and sole-individual organizations pose unique situations when implementing an SMS. As a result of these factors, the regulatory sections as detailed in 14 CFR § 5.9(e) are excepted from the implementation requirements for organizations with a single pilot/sole individual who is the sole individual performing all necessary functions in the conduct and execution related to, or in direct support of, the safe operation of aircraft.

3) The exceptions stated in 14 CFR § 5.9(e) are applicable within the SMS Voluntary Program (SMSVP) to any sole individual aviation organization. Additional guidance is outlined in Volume 17, Chapter 1, Section 2.

D. SMSVP. The SMSVP applies to aviation organizations not required to have an SMS by regulation. Volume 17, Chapter 3 provides guidance on the applicability, recognition, and oversight for an aviation organization requesting to receive acknowledgment of its SMS.

E. Corporate SMS. A Corporate SMS applies to aviation organizations that incorporate multiple 14 CFR parts, which may be overseen by a single or multiple responsible Flight Standards offices or Certificate Management Teams (CMT). The Corporate SMS is developed with standardized processes and procedures to be utilized with both the Parent and Satellite aviation organizations. Guidance on the recognition and oversight process of a Corporate SMS is outlined in Volume 17, Chapter 4.

17-1-1-3 PERFORMANCE-BASED RULE. Title 14 CFR part 5 is a performance-based regulation. Performance-based regulations define the desired outcome of the regulation but do not prescribe how to achieve that outcome. The performance-based regulation allows the aviation organization to develop processes and procedures that are appropriate for the size and scope of its operation. This is commonly referred to as scalability. For example, instead of telling pilots exactly which navigation systems to use, a performance-based rule sets standards for how well the navigation must work. This means aviation organizations can choose the navigation equipment that meets their needs.

A. FAA Responsibility. The Administrator ensures that aviation organizations meet and consistently uphold the minimum standards for SMS practices, methods, and procedures to ensure regulatory compliance and safety. Aviation inspectors assess safety risks and conduct inspections to verify applicants and aviation organizations are following SMS practices in accordance with 14 CFR part 5 regulations.

1) During Initial Certification. For those organizations required to develop and implement an SMS that meets the requirements of 14 CFR part 5, the design and performance of the SMS will be evaluated as part of certification.

2) Existing Organizations.

a) When the organization develops and implements an SMS that meets the requirements of 14 CFR part 5 and submits a declaration of compliance, the responsible Flight Standards office will update the organization's Vitals tab in Safety Assurance System (SAS) Configuration [Module 1] or on the Non-Certificated screen of SAS Configuration [Module 1], as required.

b) The oversight of the organization's SMS will be integrated into routine certificate management functions or conducted concurrently. Compliance with 14 CFR part 5 will be validated during Continued Operational Safety (COS) by assessing the performance of the organization's SMS.

B. Aviation Organization's Responsibility. Organizations required by 14 CFR part 5 or voluntarily implementing an SMS must develop and implement an SMS into their operations. The aviation organization designates an accountable executive who has final authority over operations authorized under its certificate and is ultimately responsible for the company's safety performance. The accountable executive provides adequate resources for SMS

development and implementation of the SMS in all relevant areas of the organization and ensures ongoing conformance to 14 CFR part 5. The organization is responsible to develop, implement, and manage hazard-related risks and provide service with the highest degree of safety in the public interest.

C. Regulatory Compliance.

1) An SMS is not meant to be a separate system built alongside or on top of other business systems. An SMS must be integrated into an existing business structure that supports the daily operations of the aviation organization. A properly integrated SMS improves an organization's ability to leverage data to make informed decisions and reduces failures associated with implementing new or revised operational processes.

2) FAA employees must understand that SMS processes cannot be leveraged by an organization, in any way, as a substitute for compliance with other applicable regulatory requirements. This prohibition on leveraging an SMS would include substituting an organization's risk acceptance decisions for compliance, thwarting the FAA exemption and deviation processes, and/or delaying regulatory compliance actions by the organization. Therefore, it is not the intent or purpose of an SMS to circumvent regulatory compliance; rather, it is a management support mechanism to enhance an organization's ability to maintain compliance with applicable regulations and manage its inherent operational risks.

NOTE: It is crucial to emphasize that SMS processes cannot be used by aviation organizations to evade or delay regulatory obligations. The primary purpose of an SMS is to bolster an organization's ability to uphold compliance with applicable regulations and effectively manage operational risks.

17-1-1-5 DEFINITIONS. This paragraph contains definitions that are used throughout this volume.

Term	Definition
Accountable Executive	A single, identifiable individual having responsibility for the aviation organization's SMS. Specific requirements are located in 14 CFR § 5.25.
Aviation Organization	For the purposes of an SMS, an air carrier, air operator, air agency, air tour operator with an LOA, and all 14 CFR parts outlined in Volume 17, Chapter 3 under SMSVP applicability are considered an aviation organization.
Causal Factors	The set of elements that affect an event's outcome. A causal factor is not necessarily a root cause—while removing a causal factor can benefit an outcome, it does not with certainty prevent recurrence of an undesirable event.
Conformance	Agreement in nature or form of a presented document, process, or system.

Term	Definition
Continued Operational Safety (COS)	Routine recurring Performance Assessments (i.e., routine surveillance through safety inspections). Also includes certificate management and the management of major changes in operations (i.e., system configuration changes).
Corporate Safety Management System (SMS)	An SMS developed with standardized processes and procedures to be utilized at the Parent Corporation/Organization and all Satellite aviation organizations. This will ensure uniformity and consistency across the entire organization, except where operational differences applicable to the operations are acceptable. Differences may be acceptable when adequately described and interfaced with the Parent aviation organization's manual. NOTE: Definitions specific to Corporate SMS are outlined in Volume 17, Chapter 4.
Corrective Action	An action to eliminate the cause of an identified nonconformity or other undesirable condition to prevent its recurrence.
Declaration of Compliance	A document submitted to the FAA that declares the aviation organization has developed and implemented an SMS in compliance with 14 CFR part 5, whether required by regulation or voluntarily implemented.
Hazard	A condition or an object that could foreseeably cause or contribute to an incident or aircraft accident. "Incident" and "aircraft accident" are defined in Title 49 of the Code of Federal Regulations (49 CFR) § 830.2.
Person	The term "person" is defined in 14 CFR § 1.1 as "an individual, firm, partnership, corporation, company, association, joint-stock association, or governmental entity." It includes a trustee, receiver, assignee, or similar representative of any of them. This definition includes CHs, service providers, or other types of individuals or business entities and is used throughout 14 CFR. For the purposes of 14 CFR part 5, the term "person" can be used to refer to an individual or to an aviation organization.
Preventive Action	Action to eliminate or mitigate the cause or reduce the effects of potential nonconformity or another undesirable situation.
Process Owner	A person who is accountable for oversight of a process area within the organization and has final authority to accept risks that may exist within the process area.
Risk	The composite of predicted severity and likelihood of the potential effect of a hazard.

Term	Definition
Risk Control	A means to reduce or eliminate the effects of hazards.
Safety Assurance (SA)	The processes within the SMS that function systematically to ensure the performance and effectiveness of safety risk controls and that the organization meets or exceeds its safety objectives through the collection, analysis, and assessment of information.
Safety Culture	The shared values, actions, and behaviors that demonstrate a commitment to safety over competing goals and demands.
Safety Management System (SMS)	The formal, top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety risk controls. It includes systematic procedures, practices, and policies for the management of safety risk.
Safety Management System (SMS) Records	All recorded data, reports, analyses, directed studies, or other information, in any format, which provide objective evidence of SMS outputs required by 14 CFR § 5.97. These records must be maintained by the aviation organization to include outputs of SRM and SA processes. They include training records maintained under 14 CFR § 5.91 and all safety communications provided under 14 CFR § 5.93. SMS records include reports, data, or other information produced or collected for purposes of developing and implementing an SMS or SMSVP.
Safety Objective	A measurable goal or desirable outcome related to safety.
Safety Performance	Realized or actual safety accomplishment relative to the organization's safety objectives.
Safety Policy	The aviation organization's documented commitment to safety, which defines its safety objectives and the accountabilities and responsibilities of its employees in regard to safety.
Safety Promotion	A combination of training and communication of safety information to support the implementation and operation of an SMS in an organization.
Safety Risk Management (SRM)	A process within the SMS composed of analyzing the system, identifying the hazards, and analyzing, assessing, and controlling safety risk.
Safety Risk Management (SRM) Triggers	In the context of 14 CFR § 5.51, we commonly refer to the following actions as SRM triggers: • Implementation of new systems, • Revision of existing systems, • Development of operational procedures, and • Identification of hazards or ineffective risk controls through the SA processes.

Term	Definition
Scalability (Implementation Strategy)	Aviation organizations range widely in complexity, and each aviation organization implementing an SMS to comply with 14 CFR part 5 should tailor its SMS policies, methods, and procedures to reflect the size and scope of its organization. The term "scalability" is not defined to mean or imply any authority to deviate from 14 CFR part 5. This concept is also referred to as an "implementation strategy."
Single Pilot/Sole Individual	The sole individual performing all necessary functions in the conduct and execution related to, or in direct support of, the safe operation of aircraft. For the purposes of this volume, the term "single individual" should be considered the same as single pilot/sole individual. As an example, a single individual might also be the sole employee in a repair station. In a sole individual organization, the sole individual is also the accountable executive.
System	A group of interacting, interrelated, or interdependent elements forming a complete whole.
System Analysis	The first process within SRM, which involves analyzing the system. The following information must be considered in conducting the system analysis: the function and purpose of the system; the system's operating environment; an outline of the system's processes and procedures; and the personnel, equipment, and facilities necessary for operation of the system.

17-1-1-7 SMS FUNDAMENTALS.

A. What is an SMS? An SMS is a formal, top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety risk controls. It includes systematic procedures, practices, and policies for the management of safety risk. An SMS does not have to be an extensive, expensive, or sophisticated array of techniques to do what it is supposed to do. Rather, an SMS is built by structuring safety management around four components: safety policy, SRM, SA, and safety promotion. A brief description of these components is provided below.

B. Safety Policy.

1) Definition. Safety policy is where an aviation organization sets safety objectives, assigns responsibilities, and sets standards for the organization and employees. It is also where management conveys its commitment to the safety performance of the organization to its employees. As SRM and SA processes are developed, the aviation organization revisits the safety policy to ensure that the commitments in the policy are being realized and the standards are being upheld.

2) Safety Objectives. Safety objectives provide direction to the organization's activities and should therefore be consistent with the safety policy that sets out the high-level safety commitment. Safety objectives may be included in the safety policy or documented

separately but, in any case, they define what the organization intends to achieve in terms of safety.

a) Title 14 CFR § 5.3 defines safety objective as "a measurable goal or desirable outcome related to safety." This safety objective definition equates an objective to a measurable goal or desirable outcome and as a result has created confusion as to what a safety objective should look like and how it is used.

b) For example, some aviation organizations have developed simplistic objectives that do not allow for measurement of safety performance. The use of high-level, end-state safety objectives, such as zero aircraft accidents or incidents, are of limited value to the management of safety.

C. Safety Risk Management (SRM). The SRM component provides a decision-making process for identifying hazards and mitigating risk based on a thorough understanding of the organization's systems and their operating environment. SRM includes decision making regarding what level of safety risk is acceptable. The SRM component is the organization's way of fulfilling its commitment to consider risk in its operations and to eliminate risk or reduce it to an acceptable level. In that sense, SRM is a design process and a way to incorporate risk controls into processes, products, and services, or to redesign controls where existing ones are not meeting the organization's expectations.

D. Safety Assurance (SA). SA provides aviation organizations with the necessary processes to promote confidence that the system is meeting defined safety objectives and that implemented mitigations or existing risk controls are working. In SA, the goal is to monitor what is going on and review what has happened to ensure safety objectives are being met. Thus, SA requires monitoring and measuring safety performance of operational processes and continuously improving the level of safety performance. Strong SA processes will yield information used to maintain the integrity of risk controls. SA processes are thus a means of assuring the safety performance of the organization, keeping it on track, and identifying needs for rethinking (or correcting) existing processes.

E. Safety Promotion. The last component, safety promotion, is designed to ensure that employees have a solid understanding regarding their safety responsibilities and the aviation organization's safety policies and expectations, reporting procedures, and risk controls. Thus, training and communication are key areas of safety promotion.

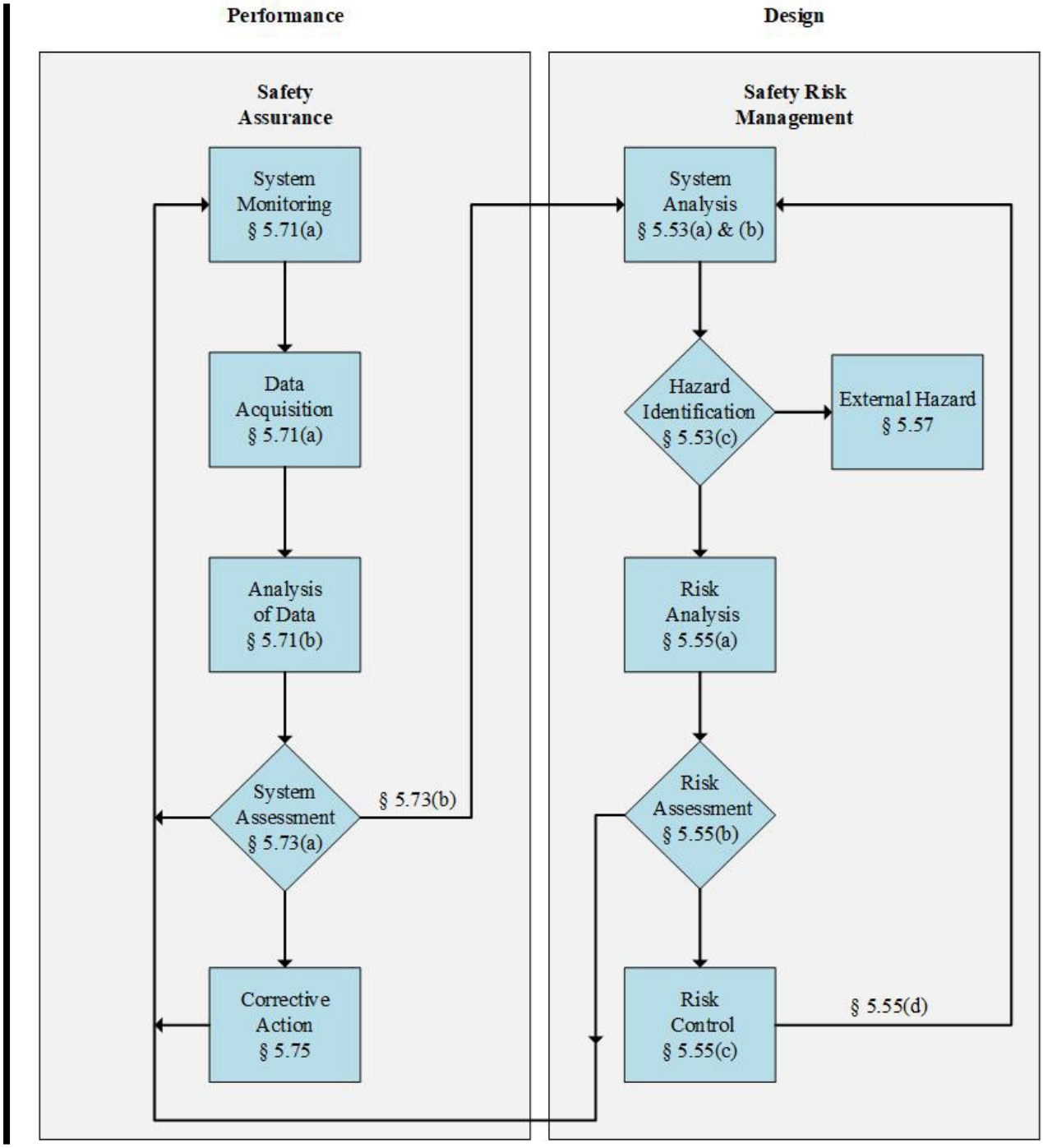
F. Summary. An SMS does not have to be large, complex, or expensive in order to add value. Active involvement of operational leaders, maintaining open lines of communication up and down the aviation organization and among peers, staying vigilant in looking for new hazards and identifying associated risks, and ensuring that employees know that safety is an essential part of their job performance are key elements that can have a positive effect on the aviation organization's SRM decisions.

17-1-1-9 CONCEPTUAL OVERVIEW OF SA AND SRM.

A. Graphical Overview of SA and SRM Processes. Figure 17-1-1A, Safety Management Decision-Making Processes, provides an expanded view of the principal processes

of the SMS: SA and SRM. In the discussion that follows, some key terms and concepts related to SMS processes will be introduced.

Figure 17-1-1A. Safety Management Decision-Making Processes



B. SA and Interactions With SRM.

1) SA processes monitor the day-to-day life cycle of system operations (System Monitoring), with the designed risk controls in place. A variety of data sources (Data Acquisition), such as audits, investigations, and employee reporting, is utilized. The SA process involves several steps. Once the data has been obtained, the process owner analyzes the data that will be used in decision making (Analysis of Data). The decision making can result in several possible outcomes (System Assessment). If the data and analysis indicate the processes, procedures, and integrated risk controls are functioning as intended, the result is satisfactory, and management can have confidence that organizational goals and safety objectives are being met and will continue to monitor the system.

2) If a negative result is identified and the organization determines the shortfall is due to the controls not being used as intended (e.g., required training not accomplished, procedures not followed, or improper tools or equipment provided), corrective action (14 CFR § 5.75) will be taken to correct the problem (e.g., retraining).

3) If a negative result is identified and the system is being used as designed and not producing the expected results (e.g., ineffective control), the SRM process will be applied to address the system design (14 CFR § 5.73(b)).

4) The identification of a new hazard or ineffective risk control during the SA process requires an organization to initiate the SRM process. For organizations transitioning into an SMS, the SRM process may initially be challenging if their operational systems have not been built using a risk management process (RMP) because they may lack formal or well-understood risk controls.

5) Managers or process owners who are responsible for operational processes are also responsible for assuring that their process areas are performing as intended from an aviation safety standpoint.

C. SRM. In SRM, the first step, System Analysis, is used to understand the processes and procedures being developed or revised, or where new hazards or changes of the operational environment have been identified. The system analysis needs to consider the operating environment, the personnel involved in the operation, the equipment being used, any training needed, operational procedures, and interfaces with other processes or procedures. In most cases, hazard identification flows from this system analysis. Hazard identification requires process owners to ask questions such as:

- What hazards exist in the operational environment?
- What are the human factor (HF) issues of the operation (e.g., workload, distraction, fatigue, or system complexity)?
- What are the limitations of the hardware, software, procedures, etc.?

1) Although Figure 17-1-1A above depicts these processes as distinctly defined components, they flow from one to the other in practice. For example, in a careful discussion of

how a system currently works (System Analysis), hazards will often become evident. Thus, the Hazard Identification step has also been at least partially accomplished.

2) The process owner then conducts an analysis of the potential consequences of operation in the presence of the identified hazards (Risk Analysis). This culminates in an assessment of the acceptability of operating with these hazards (Risk Assessment) or whether or not the risk of such operations can be eliminated or mitigated to an acceptable level (Risk Control). Operational managers or process owners must be the ones who are accountable for risk acceptance and mitigation decisions.

3) After a system has been designed or revised using the SRM process, special attention should be given to the new or revised system using the SA process. It should not be surprising to find at this time that there are still things that might not have been considered or that there are changes over time in the operational environment that require a return to SRM. Thus, the SRM and SA processes operate in a continuous exchange.

D. Safety Culture and Safety Management. The culture of an organization is demonstrated through the organization's values, traits, and behaviors. The term "safety culture" is used to describe those aspects of the organization's culture relating to its safety performance. A company's safety culture can change from positive to negative and vice versa. While organizations strive to maintain and grow a positive safety culture, many organizations fail to realize in a timely manner the negative changes in the organization's safety culture. This change may creep in due to numerous factors, including employee beliefs, management practices, communication, or business changes to name a few. The aviation safety inspector (ASI) should be aware of the changes in the organization and the effect they may have on the safety culture of the organization. An organization that has a positive safety culture embraces open communication and continuous improvement. Management's consistent attention, commitment, involvement, and visible leadership are essential in guiding an organization toward a positive safety culture. A positive safety culture matures as safety management skills are learned, practiced, and become second nature across the entire organization. The following are practices and characteristics of organizations that foster a positive safety culture. The key values of a safety culture play a crucial role in the maturity and effectiveness of an SMS. Incorporating these key values into the aviation industry's SMS ensures a comprehensive approach to maintaining and enhancing safety standards, ultimately contributing to safer skies. Further discussion regarding the assessment of an organization's safety culture is outlined in Volume 17, Chapter 5.

1) Informed Culture. In an informed culture, aviation personnel are well aware of the various safety risks and issues inherent in their operations. This awareness is achieved through regular, comprehensive training programs and continuous access to updated safety information and protocols. For example, regular safety briefings, detailed manuals, ongoing training programs, and transparent communication channels ensure everyone is knowledgeable about potential hazards and the measures to mitigate them.

2) Flexible Culture. A flexible culture in aviation is one that can quickly adapt to changing conditions and unexpected situations. This flexibility is critical for handling diverse and dynamic challenges, such as sudden weather changes or unexpected technical issues. For

example, agility in operational procedures, effective cross-functional teamwork, and dynamic response strategies enable quick and effective adjustments to ensure safety.

3) Just Culture. A just culture within aviation ensures that staff can report mistakes and near misses without fear of undue punishment. This balance between accountability and learning fosters an environment where safety is prioritized, and individuals are encouraged to share information that can prevent future incidents (e.g., fair treatment of employees, clear guidelines on acceptable and unacceptable behavior, and an emphasis on learning from errors rather than punishing them).

4) Reporting Culture. A reporting culture is essential in aviation for gathering critical data on safety concerns, incidents, and near misses. Encouraging aviation personnel to report such issues helps the organization to identify and address potential safety risks proactively (e.g., accessible and user-friendly reporting systems, a nonpunitive approach to reporting, and strong leadership support for open communication about safety issues).

5) Learning Culture. A learning culture in aviation is dedicated to continuous improvement by analyzing past incidents and implementing changes to prevent recurrence. This involves a systematic approach to reviewing safety data, understanding root causes, and applying lessons learned to enhance safety practices (e.g., commitment to ongoing education and training, thorough incident analysis processes, and proactive implementation of safety improvements based on learned experiences).

17-1-1-11 FLOW DOWN OF 14 CFR PART 5 REQUIREMENT.

A. Applicability. The SMS requirements of 14 CFR part 5 are intended to be applied to individual aviation organizations. This rule does not require the organization to require an SMS on the part of contractors, code-share partners, or other business affiliates.

B. SRM Triggers. Contractual requirements for arrangements do not relieve the organization from its responsibilities under this rule. Title 14 CFR § 5.51 requires SRM processes be applied anytime one of the four SRM triggers are met. The four SRM triggers are defined as:

- Implementation of new systems,
- Revision of existing systems,
- Development of operational procedures, and
- Identification of hazards or ineffective risk controls through the SA processes.

17-1-1-13 SMS DOCUMENTATION. Title 14 CFR part 5 and the SMSVP both require the aviation organization to document its safety policy and SMS processes and procedures. It is not specified where this documentation must be located.

17-1-1-15 MATURITY LEVEL. In its basic terms, safety maturity is how advanced or mature an organization is when it comes to its SMS. Maturity indicates the level at which the organization can manage its actions and revise its internal procedures, resulting in a better safety performance.

A. Measuring and Achieving Maturity. Maturity is measured in levels that indicate how capable, and thus mature, an organization is. Safety maturity refers to the maturity of companies' human resources related to safety and has nothing to do with technical issues. For most organizations, SMS will take time to implement and several years to mature.

B. Maturity Level Assessment. The maturity level of an SMS provides the ASI an indication of how well the aviation organization can manage known risks in its operation. As the organization's use of SMS matures, it should be in a better position to identify and manage new risks in its operations. The ASI's confidence in the organization's ability to identify and manage risk supports Risk-Based Decision Making (RBDM) and allows the ASI to focus on other areas that might need additional oversight. The benefit is appropriately applying resources for oversight in areas of greatest need. The maturity level model within this volume is designed to assist ASIs in identifying potential problem areas that may occur in an organization's SMS. Further discussion regarding the assessment of an organization's SMS maturity level is outlined in Volume 17, Chapter 5.

17-1-1-17 REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions). The current editions of the following documents may be helpful in assessing an SMS. These documents may be found in the SAS Resource Guide (SRG), in the Dynamic Regulatory System (DRS), or at https://www.faa.gov.

1) FAA Documents:

- Title 14 CFR Part 5.
- Advisory Circular (AC) 120-92, Safety Management Systems for Aviation Service Providers.

2) International Publications:

- ICAO Annex 19, Safety Management.
- ICAO Doc 9859, Safety Management Manual.

3) Additional Guidance. The following references may be of value to users of this document:

- AC 00-46, Aviation Safety Reporting Program.
- AC 00-58, Voluntary Disclosure Reporting Program.
- AC 120-49, Parts 121 and 135 Certification.
- AC 120-54, Advanced Qualification Program.
- AC 120-59, Internal Evaluation Programs.
- AC 120-66, Aviation Safety Action Program.
- AC 120-79, Developing and Implementing an Air Carrier Continuing Analysis and Surveillance System.
- AC 120-82, Flight Operational Quality Assurance.
- AC 120-90, Line Operations Safety Audits.

B. Forms. None.

C. Job Aids. The following job aids are available on the SRG, under the Initial Certification/CSOP section. The use of the job aids by the CH is not required.

1) Title 14 CFR Part 135 Single Pilot (Peer Group D):

- Initial Certification SMS Design Job Aid Part 135 Single Pilot (SP) Peer Group D.
- Initial Certification SMS Design Job Aid Part 135 Single Pilot (SP) Peer Group D Sole Individual.

2) Title 14 CFR Part 91.147 LOA:

- SMS Design Job Aid 91.147 LOA.
- SMS Design Job Aid 91.147 LOA Sole Individual.

17-1-1-19 through 17-1-1-33 RESERVED.