

**OFFICE OF AIRPORT SAFETY AND STANDARDS**  
**AIRPORT CERTIFICATION PROGRAM**



**SAFETY MANAGEMENT SYSTEM (SMS)**  
**PILOT STUDY**  
**PARTICIPANT'S GUIDE**

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**TABLE OF CONTENTS**

**SECTION 1: BACKGROUND INFORMATION ..... 2**

**SECTION 2: SCOPE ..... 4**

**APPENDIX 1: SAFETY PROGRAM MANUAL (SPM) CONTENTS..... 5**

**APPENDIX 2: SAFETY PROGRAM MANUAL GAP ANALYSIS ..... 8**

**APPENDIX 3: REFERENCES AND CONTACT INFORMATION ..... 10**

## **SECTION 1: BACKGROUND INFORMATION**

### **1. OBJECTIVE**

The FAA is conducting a pilot program to evaluate the implementation of Safety Management Systems (SMS) at airports of varying size and complexity. The pilot program will allow airports and the FAA to gain experience establishing airport-specific SMS that are tailored for the individual airport. This experience will provide SMS best practices and lessons learned that the FAA can use as it considers whether to incorporate SMS into Title 14 Code of Federal Regulations (CFR), Part 139, *Certification of Airports*.

### **2. ANTICIPATED BENEFITS**

The application of a systematic, proactive, and well-defined safety program, as is inherent in SMS, will allow Airport Operators to continue to improve safety in the face of significant forecasted growth in air traffic activity. SMS contributes to this effort by increasing the likelihood that Airport Operators will detect and correct safety problems before they result in an aircraft accident or incident.

The FAA benefits from the opportunity to assimilate the experience of Airport Operators in developing an SMS for airports of widely varying activity levels and operational complexity. The FAA anticipates moving to a more formal requirement for the use of SMS at U.S. airports, consistent with the recent International Civil Aviation Organization (ICAO) amendment to Annex 14, which makes SMS a mandatory standard at international airports. Experience gained through review of the SMS plans developed under this pilot program will be extremely useful when developing a general U.S. standard.

### **3. APPROACH**

Because SMS is not a regulatory requirement in the United States at this time, the SMS Manual and program developed under the pilot program should remain separate from the Airport Certification Manual (ACM) required under 14 CFR Part 139. (Changing the ACM itself requires FAA approval.) FAA Airport Certification Safety Inspectors may ask to review an airport's SMS documents, but they will not consider the SMS (or lack thereof) when determining the airport's compliance with Part 139.

The SMS Manual and program plan should not simply apply guidance that has been developed in other countries to comply with their safety oversight rules or duplicate SMS plans of airports subject to those rules. Rather, the SMS Manual and plan should complement the existing U.S. safety requirements in 14 CFR Part 139 and be consistent with Part 139, FAA Advisory Circulars, and the airport's Airport Certification Manual. Therefore, the SMS Manual and program plan should identify which elements of the airport operator's existing practices and guidance materials currently meet SMS requirements, which elements do not, and how these latter practices and documents will be revised in the future for consistency with the SMS plan.

#### **4. AIRPORT IMPROVEMENT PROGRAM (AIP) ELIGIBILITY**

The FAA has determined that contract costs incurred for development of an initial SMS at an airport are eligible for AIP planning grant funds. Information about AIP grant eligibility can be obtained through the appropriate FAA Regional Airports Division or Airport District Office (ADO) and on the FAA website:

[http://www.faa.gov/airports\\_airtraffic/airports/airport\\_safety/safety\\_management\\_systems/](http://www.faa.gov/airports_airtraffic/airports/airport_safety/safety_management_systems/)

#### **5. ADDITIONAL GUIDANCE**

If a regulation on SMS is adopted, the FAA will update the SMS Advisory Circular (AC 150/5200-37, Introduction to Safety Management Systems for Airport Operators) and issue any additional guidance necessary for its implementation, including a detailed checklist and possibly a model SMS plan.

In addition, two related projects have been approved for funding under the Airport Cooperative Research Program (ACRP) — administered by the Transportation Research Board (TRB) — that will provide further guidance on SMS implementation by Airport Operators. First, the Mitre Corporation has received an ACRP grant to produce a white paper on SMS with a description of its general benefits, the ICAO requirement, and how SMS could be used at airports in the U.S. The white paper should be published in the summer of 2007. Second, the ACRP has approved a project for development of an SMS user guidebook for Airport Operators with detailed practical guidance on the implementation of an airport SMS. This project should be completed by September 2008.

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## SECTION 2: SCOPE

The Office of Airport Safety and Standards (AAS) will select 10 to 20 airports of varying sizes to participate in pilot studies in the development of a Safety Program Manual (SPM). The SPM is a plan of SMS implementation. Participants will benefit from being early adopters of a proactive safety program being developed by the FAA and already in use by some Airport Operators. Further benefits may be realized through improved safety and reduced operating costs in the airport operations arena.

The Airport Operators that participate in the pilot study will be responsible for developing and documenting their SMS programs in an internal SPM, as outlined in [Appendix 1](#). The SPM will ensure safety policies developed by top management are clearly communicated to the entire organization. Safety promotion activities will take place to instill or reinforce a safety culture throughout the organization. At least one functional department should begin to use the full SMS functions, including safety risk management and safety assurance.

The importance of developing an SPM is to define where 14 CFR Part 139 and associated FAA guidance material do or do not include all of the requirements of SMS. In other words, the SPM should identify “gaps” between the Airport Certification Program and the SMS being developed for the airport. Eventually, the ACM should be updated to fill these gaps and meet the intent of SMS. [Appendix 2](#) provides an example of a gap analysis and how it should be documented in an SPM.

While developing the SPM, Airport Operators should extract SMS principles from the existing ACM, Memorandums of Understanding/Memorandums of Agreement (MOUs/MOAs), Safety During Construction Plans, Surface Movement Guidance Control Plans, Airport Emergency Plans, and other documents to address SMS requirements.

Pilot studies should meet the timelines identified in [Appendix 1](#). This aggressive schedule may require some adjustments, and time extensions will be discussed on a case-by-case basis.

## **APPENDIX 1: SAFETY PROGRAM MANUAL (SPM) CONTENTS**

Airport Operators participating in the pilot program should complete development of the SMS Manual and program 6 months after award of the AIP grant within 6 to 8 months. To help the FAA evaluate the SMS airport-specific development process, provide copies of the following documents to the FAA as they are completed. The FAA encourages Airport Operators and their consultants to refer other interim draft documents, questions, and comments to the FAA at any time in the process for consultation and information exchange.

### **1. SCHEDULE**

#### **a. Gap Analysis**

The gap analysis should identify procedures, policies, documentation, and actions the airport needs to implement as part of its SMS that go beyond the current Part 139 requirements addressed by the airport's ACM.

- Estimated completion date: 2 months from project start

#### **b. Draft Plan**

The draft should address the gap analysis and describe safety risk management, risk mitigation strategies, and documentation processes.

- Estimated completion date: 5 months from project start

#### **c. Final Plan**

The Airport Operator should send a copy of the final SMS Manual and program to the FAA.

- Estimated completion date: 6 months from project start

### **2. CONTENTS OF THE SMS MANUAL AND PROGRAM**

The contents and scope of the SMS Manual and program plan should include or address the following:

- 1) Written safety policy statement and description of how it is communicated to airport employees.
- 2) Identification and description of the airport safety goals.
- 3) A plan for employee SMS indoctrination and training. SMS indoctrination training should provide an outline of proposed curriculum and resources.
- 4) Documented process to identify training requirements for systems safety.
- 5) A plan to validate training effectiveness and the process to gain training feedback, including useable metrics.

- 6) A defined process to communicate safety policies and objectives throughout the organization. Include examples of how information will be communicated and any processes for follow-up.
- 7) A plan and description of employee non-punitive reporting systems, existing and planned.
- 8) An organizational chart identifying the names and safety responsibilities of all key personnel, such as the following:
  - Top Management
  - Safety Manager
  - Department Heads/Managers
  - Established Safety Committees and Chairpersons
- 9) Description of the safety risk management process, including application of “The Five Phases of SRM (safety risk management),” as discussed in AC 150/5200-37, *Introduction to Safety Management Systems for Airport Operators*.
- 10) Guidance on the use of SRM and trend analysis.
- 11) Defined process for documenting the results of SRM, including a description of how documents will be stored, i.e., electronic or paper.
- 12) Description of how top management will follow up on SRM to ensure safety mitigation strategies are appropriate.
- 13) A description of the airport quality management and/or risk management program (if applicable) and its integration into the airport SMS.
- 14) Description of a plan to integrate apron safety management into the airport SMS. (The FAA’s review of the plan will be limited to measures for preventing accidents or incidents involving aircraft.) The plan could include the following:
  - A description of current apron safety management practices, such as reporting requirements to the National Transportation Safety Board (NTSB), Flight Standards, or the Occupational Safety Health Administration (OSHA).
  - An explanation of how current apron safety management practices meet the intent of SMS. This could include the safety plans and practices of tenants and operators at the airport, which should complement the airport SMS.
- 15) A detailed method to document self-auditing processes and their findings. Self-auditing may be part of the airport self-inspection process. If it is, explain how the self-inspection process addresses systems safety, i.e. if the self-inspection program identifies a hazard on the airport it should determine the risk and document the process for follow-up.
- 16) A detailed method to document self-inspection reviews, analysis, and findings.
- 17) A description or plan to integrate the tailored SMS program plan into the overall operation of the airport.
- 18) Documented plan for training and education, safety communication, competency, and continuous improvement processes.

- 19) Procedures to promote safety awareness and participation in non-punitive reporting systems.
- 20) Process to document and review lessons learned from within the organization.
- 21) Schedule for implementation and anticipated associated costs.

## **APPENDIX 2: SAFETY PROGRAM MANUAL GAP ANALYSIS**

In order to gain the true benefits of safety risk management (SRM), the Airport Operator should conduct a gap analysis. A gap analysis should determine whether deficiencies exist between current operations and the principles of SMS. In order to conduct the gap analysis, there must be identified benchmarks and best practices. These will normally come from surveys, committee analysis and brainstorming, professional organizations, or other sources, including other Airport Operators.

Next, compare the results of benchmarks and best practices to four elements of SMS:

- Safety Policy and Objectives
- Safety Risk Management
- Safety Assurance
- Safety Promotion.

Once the gaps have been identified, assign a meaningful value to the difference so mitigation strategies can be measured. This may be subjective in the sense of measuring human performance. Whenever possible, associate costs with SRM mitigation strategy implementation in order to create a viable metric.

As an illustration, the following example focuses on the description of the SRM process, including application of “The Five Phases of SRM.”

### **EXAMPLE**

XYZ airport holds a Class I airport operating certificate and has 350 employees. There is an assigned Safety Manager and a Safety Committee made up of department supervisors and managers. While evaluating the Vehicle Driver Training Program, the Safety Committee found gaps between their ACM and a tailored XYZ Airport Safety Management System.

In order to fulfill the requirements of 14 CFR Part 139.327, Self-inspection program, as outlined in the ACM, XYZ Airport has a checklist to follow during self-inspections. One identified gap between Part 139 and a typical SMS is the lack of a non-punitive safety reporting system for employees, which is not required under Part 139. In order to create such a system, the Airport Operator must hire a consultant or find an Operator who has implemented a similar system. A non-punitive hazard reporting system must produce useful information. Thus, the method of gathering data must be sufficient to produce a desired effect.

Because of the many non-punitive safety reporting systems available through industry and the FAA, the Safety Manager chooses to build a safety reporting form from various sources. The safety reporting system is advertised on bulletin boards, explained in training sessions, and described in the safety policy. The Safety Manager goes even further to promote the system by recognizing the section that delivers the most comprehensive and useful reports. The Safety Manager has devised a plan to review safety reports weekly along with the Safety Committee. A policy is adopted to address every safety report, no matter how small. The results of this follow-up will be categorized and assigned a value based on determined significance to safety. Using

the “Predictive Risk Matrix” described in AC 150/5200-37, the Safety Committee determines severity and likelihood, applies risk mitigation strategies, and documents the process for remediation and future follow-up. A plan is identified to categorize the reports so future reports may be compared. This plan allows the Safety Manager to tailor risk mitigation strategies and/or identify inadequate risk mitigation strategies.

The SMS Lifecycle Overview in AC 150/5200-37 provides a visual depiction of this process.

## **APPENDIX 3: REFERENCES AND CONTACT INFORMATION**

### **REFERENCES**

[FAA Advisory Circular 150/5200-37, Introduction to Safety Management Systems for Airport Operators](#)

[FAA Advisory Circular 120-92, Introduction to Safety Management Systems for Air Operators](#)

[MIL-STD-882D, Department of Defense, Standard Practice for System Safety](#)

[Transport Canada Safety Management Systems](#)

[ICAO Document 9859, Safety Management Manual](#)

[Australian Government Civil Aviation Safety Authority Safety Management Systems](#)

[Department of Energy Manual 450.4-1, Integrated Safety Management System Manual](#) (search by number)

### **EXAMPLES OF APPLIED SMS METHODOLOGY FROM OTHER INDUSTRIES**

[Woods Hole Oceanographic Institution Online Safety Manual](#)

[Integrated Safety Manual – A Tool That Works!](#)

[Lawrence Livermore National Laboratory Integrated Safety Management System Description](#)

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