FAA
Office of Airports

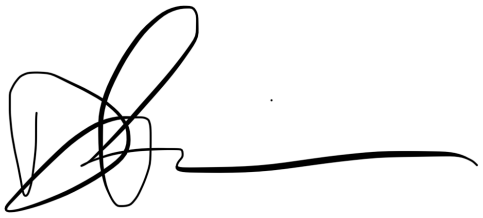
FAA Office of Airports Safety Management System (SMS)

Desk Reference

Version 2.1

November 20, 2023

John R. Dermody
Director of Airport Safety and Standards



Danielle J. Rinsler
Director, Airport Planning and Programming

Table of Contents

List of Figures

List of Tables

1 Purpose and Scope

This desk reference supplements Federal Aviation Administration (FAA) Order 5200.11A, *FAA Airports (ARP) Safety Management System (SMS)*, by clarifying the requirements and processes of the Office of Airports (ARP) Safety Management System (SMS). This document primarily focuses on the procedures for complying with the Safety Risk Management (SRM) component of SMS. However, it also includes guidance on evaluating the ARP SMS through the Safety Assurance process and explains the role of airport sponsors and state aviation organizations. Electronic copies of the Order and Desk Reference are available online at www.faa.gov.

ARP SMS approval determinations and actions apply to small, medium, and large hub airports as deemed appropriate by the responsible FAA ARP representative. The regional Airports office or Airports District Offices (ADOs) may elect to conduct SRM at non-hub airports and non-primary (general aviation) airports where it is deemed beneficial and appropriate.

Refer to this guidance for SMS direction when developing, revising and approving ARP standards and safety actions (including advisory circulars (ACs)), airport layout plans (ALPs), Construction Safety and Phasing Plans (CSPPs), Modifications of Standards (MOS), and other ARP actions that may impact the National Airspace System (NAS). While this document is primarily intended for ARP personnel, it also may help airport sponsors, consultants, and others in the airport industry better understand ARP's SMS procedures and their responsibilities in this system.

Do not use SRM guidance for the approval and enforcement of Airport Certification Manuals under Title 14 of the Code of Federal Regulations (CFR) Part 139, *Certification of Airports*. SMS requirements, as defined in Part 139, subpart E, allow for the development and use of airport-specific SRM processes and will be included in the airport's SMS manual or ACM.

This guidance does not change the operational responsibilities of FAA personnel to comply with applicable statutory and regulatory requirements, including related ACs, in accordance with existing Airport Improvement Program (AIP) and Passenger Facility Charge (PFC) program assurances. ARP's implementation of SMS does not change an airport sponsor's responsibility to maintain and operate its airport in a safe manner.

Use this SMS Desk Reference as detailed guidance for further interpretation of the Order for ARP employees. Should guidance contained in this document conflict with FAA Order 5200.11A, the Order takes precedence. ARP will periodically revise the Desk Reference to ensure consistency with FAA Order

5200.11A and agency requirements. Refer requests for clarifications, if needed, to the Director of the Office of Airport Safety and Standards, AAS-1.

2 Introduction to the ARP SMS

SMS is an integrated collection of practices, procedures and processes the FAA uses to ensure a formal approach to system safety through hazard identification and risk management and to oversee and uphold safety throughout the NAS. It allows the FAA to manage safety by developing an organization-wide safety policy, developing formal methods of identifying hazards, analyzing, and mitigating risk, developing methods for ensuring continuous safety improvement, and creating organization-wide safety promotion strategies. When systematically applied, these activities provide a set of decision-making tools that FAA personnel and the airport industry can use to improve safety.

Each FAA line of business (LOB) is required to develop an SMS. FAA Order 8000.369, *Safety Management System,* contains requirements for establishing a common SMS within the agency. FAA Order 5200.11A establishes the ARP SMS in accordance with FAA Order 8000.369.

The goal of the Office of Airports' SMS is to identify hazards and safety concerns early in the planning phase of airport projects and when developing airport-related standards. This proactive approach to safety is intended to remove many hazards by eliminating or mitigating them during the design phase and through effective airport standards before large investments are made. It will also facilitate better coordination with other FAA LOBs by providing a means for communicating safety issues and sharing safety information among all LOBs. The ARP SMS involves commitment of FAA's Air Traffic Organization (ATO) and Aviation Safety Organization (AVS) in ARP-led safety assessments that could impact ATO or AVS operations and procedures. ARP will seek commitments from other LOBs such as Commercial Space (AST), Hazardous Material (ASH), and NextGen (ANG) when safety assessments may impact their LOBs.

In accordance with FAA's safety culture, the ARP SMS encourages identification of hazards and safety concerns from any source without fear of reprisal or other repercussions.

The ARP SMS uses a risk management approach for safety decisions and comprises the following four components:

a. Safety Policy
b. Safety Risk Management (SRM)
c. Safety Assurance
d. Safety Promotion

2.1 Safety Policy

The Safety Policy provides the foundation for SMS. It outlines the methods and tools for achieving desired safety outcomes; identifies overall goals, needs, resources and priorities; and details management's responsibility and accountability for safety. FAA Order 5200.11A, Chapter 3, Safety Policy, explains more about Safety Policy.

2.2 Safety Risk Management (SRM)

SRM is a core activity of SMS because it incorporates decision-making tools to provide a formalized approach to safety. SRM is a standardized process to proactively identify hazards, analyze, and assess potential risks, and design appropriate risk mitigation strategies. ARP will apply SRM to certain project approvals, decision making, and other airport development services. SRM and the Safety Assessment Process provide specific guidance on SRM requirements and implementation.

2.3 Safety Assurance

Safety Assurance is a set of processes that ARP uses to monitor the organization's performance in meeting its current safety standards and objectives. These processes include measures to:

a. Track how the ARP SMS performs through audits, evaluations, and analysis of safety data.

b. Confirm that mitigation measures developed through the ARP SRM are working and have their intended effect.

c. Verify that newly identified hazards are properly evaluated through the ARP SRM process.

d. Continually improve standards, operations, and practices to enhance safety.

Safety Assurance processes involve information acquisition, analysis, system assessment, and corrective actions for non-conformance.

2.4 Safety Promotion

The final component of SMS is Safety Promotion. Through a combination of training, improved communication, and confidential reporting systems, ARP promotes a positive safety culture and strives to create an environment where safety objectives can be achieved. ARP uses various internal and external methods to communicate safety goals and promote safety, including print publications, the FAA website, social media, and multimedia training presentations. FAA Order 5200.11A, Chapter 6, Safety Promotion, provides more details on ARP's goal to promote a positive and proactive safety culture.

3 Roles and Responsibilities

3.1 ARP Safety Management Cadre

FAA Order 5200.11A established a Safety Management Cadre under the Office of Airport Safety and Standards (AAS). The Safety Management Cadre is comprised of the manager of AAS-300, division managers of AAS-310 and AAS-320, the internal and external SMS coordinators.

3.2 Airports Organization (ARP)

FAA Order 8000.369 requires the FAA ARP to implement a Safety Management System. FAA Order 5200.11A outlines how ARP will implement and sustain the four components of SMS (Safety Policy, Safety Risk Management, Safety Assurance, and Safety Promotion) in its day-to-day operations. Implementing and sustaining SMS allows ARP to improve existing safety practices and create and revise procedures, as needed, to enhance safety in the national system of airports.

Key ARP responsibilities, and those of ARP's partners, in establishing its SMS are detailed throughout this guidance document.

3.3 Airport Sponsors

ARP SMS requires close coordination with, and assistance from, airport sponsors for airport projects requiring FAA approval actions, typically through AIP or PFC funding. ARP must work with airport sponsors to ensure necessary resources are considered to apply SMS, which includes early engagement of expert resources, with the benefit of identifying and resolving potential safety-related issues earlier in the planning and development process. ARP project managers should inform airport sponsors of the SRM requirements associated with FAA approvals early in the project formulation and scoping phases. Early coordination with airport sponsors and their consultants is important so project schedules include time for the SRM review and required FAA approval process.

The ARP SRM process does not change airport sponsors' obligations to safely manage and operate their airports in accordance with Federal grant assurances. It is essential that airport sponsors participate in the SRM Safety Assessment and sign the resulting Safety Assessment document, acknowledging the results and any required mitigation measures. Airport sponsors cannot delegate their role and responsibilities to an entity outside the sponsor's organizational structure.

The FAA must complete the SRM process before approving or issuing determinations for certain airport sponsor actions. When airport sponsors initiate the actions that trigger the need for SRM, the sponsor must provide the project information, including a Project Proposal Summary (PPS) (Appendix H), to help the FAA determine the appropriate level of SRM documentation. For FAA/ARP approval actions that require formal SRM panels, the airport sponsor is the lead

to coordinate and convene the SRM panel, as well as participate on the panel when required. Airport sponsors will also need to sign the associated SRM documentation and comply with any risk mitigation measures that fall within their areas of responsibility (Section 4).

3.3.1 Actions Requiring an SRM Safety Assessment

FAA Order 5200.11A, paragraph 4-3, lists the scope of triggering actions that require an SRM Safety Assessment before the FAA can issue approvals or determinations. The triggering actions are as follows:

a. Development of and updates to airport planning, environmental, engineering, construction, operations, and maintenance standards published in ACs.

b. FAA review of new or revised ALPs, excluding pen and ink changes. An ALP review may include layout design SRM consideration, while an ALP associated with airport construction SRM should address any potential risk.

c. Construction project coordination, action, or approval for federally obligated airports, including final approval of Construction Safety and Phasing Plans.

d. Approval of requests for project-specific MOSs (excludes AC 150/5370-10, *Standard Specifications for Construction of Airports*). See FAA Order 5200.11A, paragraph 4-2.

e. Other than physical construction changes, which includes non-construction changes, including runway and taxiway designations, airfield pavement marking and signage (excluding normal maintenance), runway categories (design aircraft), and, in coordination with other LOBs, planned approach or departure procedure changes.

f. Modification or update to any action representing a material change from a previous SRM review or Safety Assessment. If ARP personnel identify other sponsor actions that could introduce risk into the airport or the NAS, they should bring them to the attention of the SMS Coordinator and/or regional director who in turn will notify AAS-1 through the Safety Management Cadre. The SMS Cadre will work with the associated management team to determine if any necessary or corrective actions are required. Where actions are required, it should be publicized within ARP after being sanitized of any airport/sponsor identification to comply with ARP safety culture.

Section 4 provides further guidance on SRM for each specific triggering action.

3.3.2 Sponsor Participation in the ARP SMS

The airport sponsor plays a pivotal role in the ARP SMS by providing information to support the SRM Safety Assessment. Airport sponsor participation includes some or all of the following actions:

a. View FAA-sponsored training courses designed to help sponsors understand their role and the requirements for SRM. See paragraph 8.1 for available training courses. Requirements for panel facilitators are located in Appendix F.

b. Obtain facilitator(s) based on requirements for panel facilitators located in Appendix F. Airport sponsors should vary facilitator selection to avoid the constant use of same individual facilitators, who may become accustomed to same stakeholders on various panels at any given airport, to ensure consistency in SRM panel neutrality.

c. Understand the type of project actions that trigger the need for SRM and the types of projects that do not require SRM.

d. Notify FAA project managers early in project cycles (planning, modification of FAA standards, design, and construction) of approval actions that may trigger the need for SRM.

e. Provide documents necessary for the FAA to conduct Safety Assessment Screening and Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) coordination. If an SRM panel is required, provide the project proposal summary.

f. Pay the costs (if any) associated with developing any documentation the FAA may need to approve a final SRM document, which should normally be AIP/PFC eligible (see Section 6).

g. Participate in the SRM process for sponsor-initiated projects (including procuring a qualified panel facilitator).

h. Participate on SRM panels as SMEs or actual panel member.

i. Participate, as needed, as SMEs in ATO, AVS, or other LOB-led SRM panels for FAA-triggered SRM. For example, when the FAA installs a new navigational aid (NAVAID) or facility at the airport.

j. Sign the final SRM Safety Assessment document and acknowledge sponsor-owned risk and risk mitigation strategies (see Appendix D of FAA Order 5200.11A, which describes the airport sponsor's obligations under the SRM assessment).

k. Implement the outcome of SRM panels, including any mitigation measures.

3.4 States, U.S. Territories, and Insular Areas

States, U.S. territories, and Insular Areas (IAs) that have a safety oversight responsibility may want to establish an aviation SMS. To be eligible for AIP participation as a system planning project, the SMS must be exclusively for the airport transportation portion of the state, territory, or IA system. Also, states with aviation safety expertise may also be invited to participate as an SME on SRM panels. States play a valuable role in facilitating the SRM process for smaller airports and are encouraged to participate according to their capabilities and

interest. Contact the Office of Airport Safety and Standards (AAS-1) through the Safety Management Cadre for further guidance if a state, territory, or IA requests assistance with establishing an SMS for its aviation system.

3.5 Block Grant States

When delegated responsibilities under the ARP SMS, block grant states:

a. Follow FAA Order 5200.11A and complete the required SRM process for the triggering actions.

b. Provide copies of completed and signed SRM Safety Assessments to the Region or ADO for low and medium initial risk projects. Signatures for "*high initial risk*" remain the responsibility of ARP-1 in accordance with FAA Order 5200.11A. States with projects that have high initial risk SRM Safety Assessments will forward the SRM Safety Assessments to the appropriate ADO/Regional Office (RO) for coordination with the Safety Review Board for review and ARP-1 for disposition. See Appendix J for escalating initial high risk to ARP-1 for acceptance/approval.

c. Participate in FAA SMS and SRM training. The FAA will provide appropriate classroom and virtual training to states. Travel and other incidental costs are the responsibility of the state.

d. Fund the state role for SMS activities. However, costs associated with SRM may be covered under AIP as project formulation cost.

In cases where a block-grant state takes on direct responsibility for planning, design and/or construction of projects on behalf of airport sponsors, the state must also provide for sufficient state and sponsor participation in the SRM process.

3.6 Other FAA LOBs

While FAA Order 5200.11A applies to internal ARP roles and responsibilities, it is also compatible with FAA Order 8040.4, *Safety Risk Management Policy*, which includes the SMS participation required by ATO, AVS, AST, ASH and other LOBs. ATO, AVS, AST, ASH and ARP are committed to working together to attain integrated SMS that contributes to quality and efficiency as well as safety.

There may be cases where ATO might take the lead on SRM if supported by mission needs and resource availability. When these potential panel lead considerations occur, ARP should collaborate with ATO in seeking to couple any actions or activity into one panel to avoid duplication of panels whenever possible. In any case, participation by ATO and AVS in SRM panels will be done at their cost, to include actual panel facilitation when required. No separate reimbursable agreement will be needed for other FAA LOBs to participate in ARP SRM panels.

Likewise, ARP remains committed to participating in ATO, AST, ASH, and AVS SRM processes and panels. Efforts should be made to avoid separate SRM

panels by ARP and ATO if a single panel effectively meets the safety assessment requirement of both LOBs. However, there may be occasions where separate panels will be needed to meet different safety assessment requirements. Contact AAS-1 through the Safety Management Cadre should conflicts arise about participation, leadership, or duplication of effort for any SRM effort or panel.

Page Intentionally Blank

4 Safety Risk Management (SRM) and the Safety Assessment Process

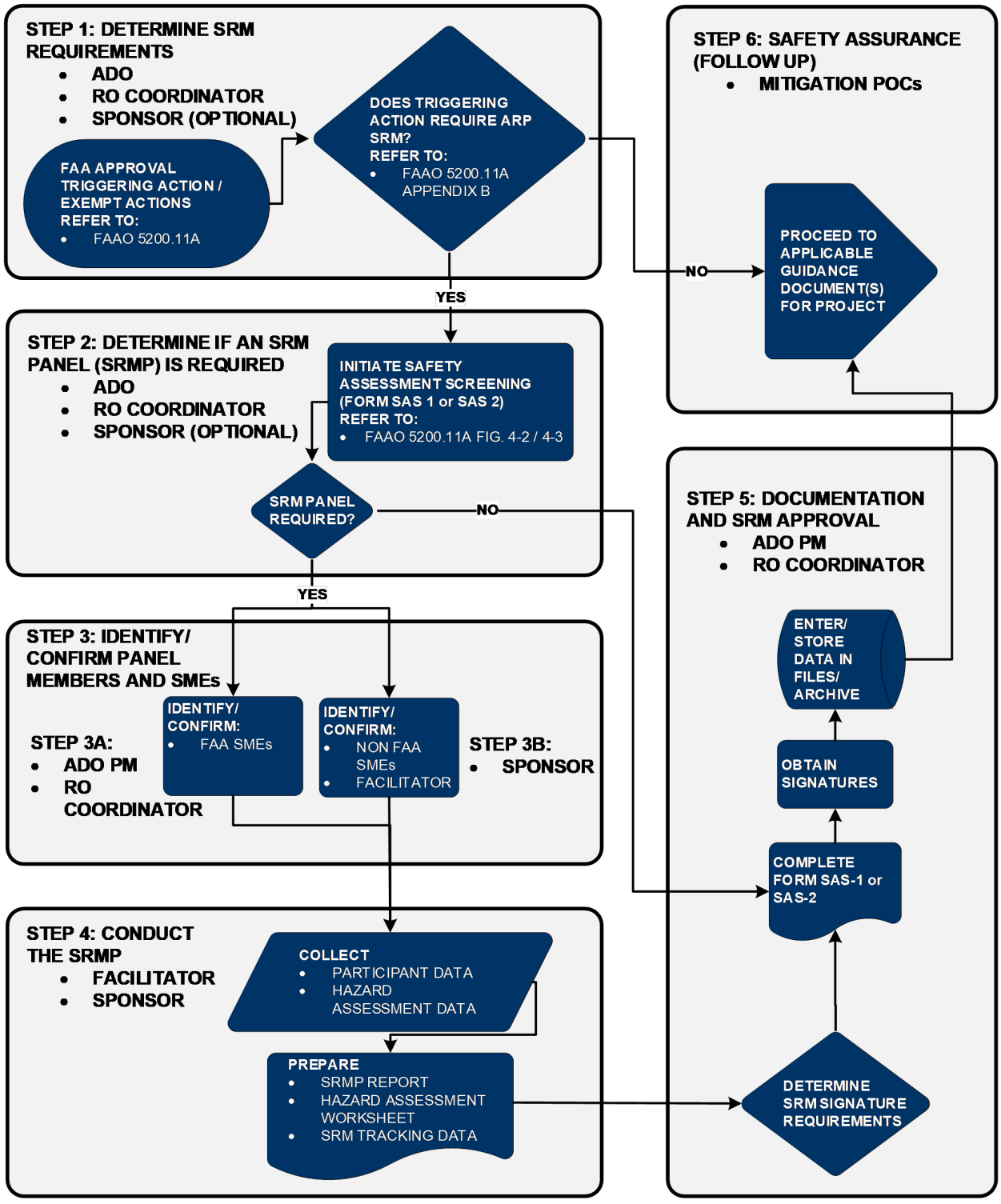
SRM is a core activity of the ARP SMS. It uses a set of standardized processes to proactively identify and fully document hazards, analyze and assess potential risks, and prescribe appropriate mitigation strategies. SRM is the most significant component of the ARP SMS, in terms of early involvement by the FAA and airport stakeholders, structured analysis, and the benefits of early identification and mitigation of safety risks. Any time the FAA must make a determination, approve an action, or develop a standard that could impact aviation safety, the agency must understand and address the safety impacts of those decisions through SRM Safety Assessments.

Safety Assessment means the completion of the applicable Safety Assessment Screening (SAS) (FAA Forms 5200-8, 5200-9 or 5200-10), the SRM five-step process of identifying and analyzing hazards and in certain instances, documenting the SRM panel's findings (if the SAS form indicates a panel is appropriate).

Complete all safety assessment documents in accordance with FAA Order 5200.11A. The Safety Assessment Screening (SAS) forms are located in FAA Order 5200.11A, Appendix D, and Appendix D and Appendix E of this Desk Reference; and should be completed to document decision making prior to approval action. These forms help determine the appropriate level of assessment and document the SRM panel findings.

A flowchart illustration of the ARP Safety Assessment process is depicted in Figure 1.

FIGURE 1 – THE ARP SAFETY ASSESSMENT (SA) PROCESS FLOWCHART



4.1 Actions Requiring SRM Safety Assessment

The office responsible for overseeing and administering the project or change action for the FAA conducts or oversees the Safety Assessment. See Section 5 for specific guidance for developing SRM Safety Assessments for each triggering action. Such actions include the following (see FAA Order 5200.11A, paragraph 4-3):

a. Development of and updates to airport planning, environmental, engineering, construction, operations, and maintenance standards published in ACs.

b. FAA review of new or revised ALPs.

c. FAA review/approval of CSPPs. Any construction on a federally obligated airport, including privately funded development, can trigger an SRM Safety Assessment. However, because a CSPP is not always required for non-federally funded projects, privately funded projects would not necessarily have a CSPP trigger for SRM.

d. Approval of requests for project-specific modifications of standards (excludes AC 150/5370-10, *Standard Specifications for Construction of Airports*).

e. Non-construction changes, including runway and taxiway designations, airfield pavement marking and signage (excluding normal maintenance, runway magnetic variation changes), runway categories (design aircraft) and, in coordination with other LOBs, planned approach or departure procedure changes.

f. Modification or update that substantially changes an action that has already been through an SRM review or Safety Assessment (see paragraph 4.10 for additional information). The FAA project manager will coordinate with the regional SMS coordinator to determine if a modification or update is a substantial change.

Note: Refer questions about whether an approval, determination or standard requires a Safety Assessment to the regional SMS coordinator or through the SMS Cadre to AAS-1.

4.2 Airport Project Approvals Not Typically Requiring SRM Safety Assessments

Appendix B of FAA Order 5200.11A lists airport project approvals not typically requiring Safety Assessments. The appendix is representative and not an all-inclusive list. Other similar ARP approval actions that would not introduce risk on an airport or into the NAS do not require Safety Assessment.

Note: Refer questions about ARP approvals requiring SRM Safety Assessment to the regional SMS coordinator or through the Safety Management Cadre to AAS-1.

4.3 Safety Assessment (SA) Process

The Safety Assessment process begins when a pending project, or action, is identified, continues through the SRM panel (if needed), and ends with final signatures on the completed SAS form. The steps below outline the generic Safety Assessment process the ADO should follow, which is explained in more depth in subsequent sections:

a. Review the SAS form Block 3 and Block 4 to determine the level of Safety Assessment (SA) required. Appendix D includes a sample of the SAS-1 form and instructions for airport planning and construction projects.

b. Determine if an SRM panel is required. Review the proposal with other FAA offices and stakeholders for the impact on aviation/airport safety and operations. The purpose is to determine the need for an SRM panel (paragraph 4.6) as early in the project cycle as possible. The FAA Project Managers (PMs)/ planners should give consideration to scoping an SRM panel in the project, up front so it is covered in potential project grants, if needed. In any case, preparations for the SRM panel should be started well enough in advance so as not to impact the final FAA approval action and the proponent's overall project schedule. This step ends with the completion of the OE/AAA review process and the System Safety Impact Checklist on the SAS form, if applicable. **If the OE/AAA review results in 'no objection' and completing the SAS form indicates an SRM panel is not required, the process stops here.** The project manager completes and signs the SAS form.

c. Ensure the airport sponsor prepares a Project Proposal Summary if an SRM panel is required. This PPS documents existing conditions and proposed changes to be considered by the safety assessment reviewers and SRM panels. It is an important document that will assist in a quality and timely outcome for the SRM. Appendix H provides a description and sample of a Project Proposal Summary.

d. Prepare for the SRM panel. Notify the airport sponsor of the need for a panel and a facilitator. Identify a facilitator (paragraph 4.6.1), identify panel members (paragraph 4.6.2) and assemble appropriate safety data, including simulation studies that may be valuable for the panel. Other data source categories include air traffic takeoff and landing numbers, runway incursion occurrences, Notice to Air Missions (NOTAMs), and wildlife activities.

e. Conduct the SRM panel meeting. Employ standard SRM processes and tools as described by paragraph 4.7.3. Ensure that final documentation includes:

    (1) Final project Proposal Summary

    (2) Panel deliberations and findings, including any dissenting opinions

(3) Completed hazard identification and analysis tools (Preliminary Hazard Analysis (PHA), Comparative Safety Assessment (CSA) or Operational Safety Assessment (OSA)) (see Appendix I)

(4) Completed SAS form, with the roster of meeting participants and ready for approval/acceptance signatures

f. Obtain final signatures on the completed SAS form with supporting documents:

(1) Airport sponsor signs when an SRM panel is completed, acknowledging panel findings for risks and mitigations associated with the project.

(2) FAA ARP management accepts the findings for the FAA.

(3) FAA Order 5200.11A, Table 4-1, Safety Assessment Acceptance and Signature Requirement, illustrates the level of authority for risk acceptance

Section 5 provides guidance for managing the Safety Assessment process for various types of projects and proposals.

4.4 ARP Project Managers and the SRM Safety Assessment

The ARP project manager (PM) is responsible for seeing the SRM Safety Assessment process through to completion. Their responsibilities may require collaboration with the regional SMS Coordinator. The project manager is the ARP personnel responsible for the overall Safety Assessment process, as related to their projects. The project manager has multiple roles in the process:

a. Serves as SRM panel member, if needed and warranted, with SME as a secondary role for any given panel.

b. Provides oversight, guidance, and direction for the entire SRM process, even when the airport consultants or others are contributing to the process.

c. Monitors and/or guides the SRM panel deliberations. The project manager consults with the facilitator to set the agenda and to ensure the meeting progresses as desired. The project manager also resolves or documents any panel impasse to keep the panel progressing to a conclusion when full consensus may not be possible.

d. Designates or selects panel members (in consultation with the regional SMS coordinator) to ensure an unbiased and thorough Safety Assessment.

e. Ensures the facilitator and note-taker record the results of the panel, including the Hazard Analysis tool, summary of key discussion points, and dissenting opinions.

f. Accepts the final SRM documentation for management review and signature(s).

Note: ARP project managers should complete the SRM for Practitioners Course (FAA Course No. 06000006, see Section 8, Safety Promotion) before assuming SRM responsibilities.

4.5 Safety Assessment Screening (SAS)

The SAS is a set of forms that document the Safety Assessment process. The SAS form should be completed internally to document decision making, as part of the approval action process. The appropriate SAS form (see Appendix D for a sample SAS-1 form and instructions) provides documentation of the overall SRM process, including signatures, that accept the findings and acknowledge the risks identified by the SRM panel, if applicable. The SAS and supporting documentation are living documents that can be revised during the life of the project or change action. FAA Order 5200.11A requires that the SAS be completed and signed before completion of the FAA approval action that triggers the SRM. See Section 5 for a description of SRM triggering actions. Figures 4-2, 4-3, and 4-4 in FAA Order 5200.11A provide process flowcharts for completing the SAS forms.

The project manager begins completing the SAS as soon as a project or SRM triggering action is identified. The timing is crucial since any potential panel needs determination to avoid impacting the project schedule, if an SRM panel will be required. For AIP development projects, consider starting the SAS when the sponsor's funding request is ripe for consideration as part of the Airports Capital Improvement Plan (ACIP). At this stage, a review of preliminary project data may be enough to anticipate and initiate planning and scheduling for the remainder of the SRM effort. For example, for projects with significant impacts on aircraft operations, a PPS should be prepared by the PM and vetted with all LOBs (through airspace or otherwise) which helps the PM determine if a panel is necessary. If so, the work to coordinate an SRM panel begins.

4.6 SRM Panels

The key to a thorough SRM Safety Assessment is the consideration and selection of SRM panel members, when a panel is required. An effective panel provides in-depth examination of hazards and risks associated with a project proposal. This forms the basis for the Safety Assessment documentation. The most effective panels include individuals representing a complete cross-section of FAA offices and stakeholders whose area(s) of expertise, responsibility, or oversight will be affected by the proposal.

Through experience, the PM will begin to realize when and if an SRM panel will be required. In these cases, generally for the complex projects or when the PM has encountered the need for a panel in similar cases, the PM should begin the planning and scheduling for an upcoming SRM panel. Although through the process, if the need for a panel is determined, or if there is an objection from the OE/AAA review, there is no requirement to delay panel formation until after the airspace comments are registered. In all cases, the PM should make every effort to mitigate any comments or rationale for an SRM panel with the commenting

LOB(s) prior to moving to a panel. If mitigation efforts fail, the project manager should work with the Sponsor and regional SMS coordinator to help identify potential SRM panel members and arrange for their attendance at a panel.

4.6.1 Panel Facilitators

The facilitator/co-facilitator are trained experts on the SRM process who moderate the deliberations of the SRM panel members from a neutral, non-biased position. All panels must have a panel facilitator. Facilitators play a key role in the outcome of the SRM process. The facilitator engages the panel to develop a thorough SRM Safety Assessment by soliciting expert advice and building consensus whenever possible. The facilitator cultivates discussion among panel members about potential hazards, risks, and mitigations.

The FAA project manager has overall responsibility for ensuring all projects issues are adequately addressed, as well as the conduct of the SRM panel meeting. Therefore, the project manager should work closely with the facilitator to ensure each step is completed, panel findings are recorded, and the outcomes/mitigations are acceptable to the FAA. The FAA project manager should ensure the sponsor's selection of the panel facilitator is in accordance with Appendix F of this desk reference. Additionally, the project manager should advise the airport sponsor to vary their selection for facilitators to avoid the appearance of impropriety.

If the airport sponsor initiates a triggering action that requires FAA approval (approval of an ALP, modification of standards (MOS), approval of a construction safety and phasing plan, non-construction changes, etc.), the sponsor is expected to provide the panel facilitator. (See Section 6 for funding eligibility of SRM-related activities and Appendix F for information on facilitator qualification and acquiring facilitator services.) In certain circumstances, the sponsor and ARP project manager may consider using FAA facilitators. For example, another FAA LOB may have trained facilitators, if available, to assist if supported by mission needs and availability. This may be appropriate for certain controversial projects where the sponsor or ARP project manager believes that it would be difficult for the airport to obtain unbiased facilitation services. Coordinate with the regional SMS coordinator to determine if another FAA LOB's resources are available to help with facilitation.

For panels analyzing internal FAA orders and ACs, the responsible office will arrange for contract or FAA facilitators.

The PM has the final say on the panel's findings and may use voting or other means to reach a decision if a consensus is not possible. The facilitator's role is to document the proceedings and, in certain instances, to act as an arbitrator. The dissenting party is responsible for providing reasons and justifications for the dissent of the SRM documentation. Dissenting opinions should be written, acknowledged, and noted in the SRM panel documentation. Acceptance of the

final draft and obtaining appropriate FAA signatures on the SAS are at the discretion of, and the responsibility of, the ARP project manager.

4.6.2 Panel Member

Panel members. These are individuals who analyze and consider all relevant and available data to form a sound basis and rationale for their deliberations. Select panel members based on their technical expertise or operational responsibilities for the facility or system under consideration. Typically, acceptable panel members should have experience and previous participation on an SRM panel. A panel member is expected to have the authority to represent and make decisions for their respective organizations. Typically, SRM panel members include representatives from the airport sponsor, industry groups, FAA offices and other official agencies. Only panel members have exclusive authority to vote on SRM panel decisions.

4.6.2.1 Subject Matter Expert.

Experts who share data, detailed information, and experience on the topic being discussed during the SRM panel meeting. An SME is not a panel member and does not participate in the safety assessment, and his or her consensus on the safety implications is not sought. SMEs participation at the panel is to provide expertise associate with their knowledge and skill set to their panel member counterpart for consideration during panel deliberation.

ARP project managers (in consultation with the regional SMS coordinator) should identify those panel member who will be objective, safety-minded and avoid promoting specific agendas. Each FAA office being involved in the proposal should be represented to avoid a biased outcome from the SRM panel. For instance, a panel comprised only of members who have a vested interest in the proposed change may find little (or no) risk associated with it. The most effective panels are those comprised of objective members representing a complete cross-section of FAA offices and industry stakeholders whose areas of responsibility/oversight/regulation are affected by the proposed change.

Smaller panels are generally better able to maintain focus, avoid conflicting discussions and reach consensus faster than larger ones, but the panel must adequately represent impacted stakeholders. If the panel gets too large, the facilitator may find it difficult to maintain control of the panel and to keep to a schedule. Some complex projects with many stakeholders who have operational, or safety, responsibilities may require large panels. In any case, be sure to limit participation only to those stakeholders with an actual need to participate.

ARP project managers should consider the following groups and the guidance above when identifying potential SRM panel members. The project manager is expected to use professional judgment in selecting the appropriate representatives. A best practice is to limit to no more than one representative from each FAA LOB or stakeholders identified in the list below.

Note: Not every panel will require a representative from each of the groups listed below.

a. Airport sponsor (only one member should be on the panel although SMEs may consist of airport operations, Aircraft Rescue and Fire Fighting (ARFF), or planning and development personnel, etc.), representatives of airport tenants (e.g., Fixed Base Operations), air carrier station personnel, GA tenant pilots, etc., that are directly affected by the proposed action

b. Field ATO: limit one panel member to local Airport Traffic Control Tower ATCT/ Air Route Traffic Control Center (ARTCC)/ Radar Approach Control – FAA (RAPCON) and one panel member from ATO District Office. SMEs may come from ATCT operations, bargaining unit, National Air Traffic Controllers Association (NATCA) representative, etc.

c. FAA Flight Procedures Office

d. ATO-Technical Operations staff

e. ATO-Safety (e.g., Regional Runway Safety Office)

f. FAA Flight Standards District Office

g. Representative of the pilot community (general aviation, corporate or airlines)

h. FAA planners/engineers/project managers

i. FAA airport certification safety inspector for certificated airports

j. State aviation partners

k. Contractors or consultants involved in the project

l. Aircraft manufacturers and/or trade associations (for standards assessments)

m. Department of Defense (DoD)/Military operations

n. Any other project-specific SME deemed necessary by the regional SMS coordinator or project manager

o. Transportation Security Administration (TSA) or other security offices as applicable

Appendix C includes the office designation for some of the FAA organizations listed above.

If possible, each selected panel member should provide a substitute in case of illness or scheduling conflicts. Appendix C includes additional contact information for FAA offices if the initial contact is unresponsive. In some instances, the regional SMS coordinator or any SMS Cadre member should be contacted if an FAA office fails to respond.

Per FAA Order 5200.11A, the project manager works with the regional SMS coordinator and airport sponsor to determine participants. The FAA project manager makes initial contact with FAA panel members. The facilitator or airport sponsor makes initial contact with other (non-FAA) panel members. The panel facilitator is responsible for notifying all identified panel members and coordinating logistics for the meeting.

4.6.2.2 Panel Observer.

Although allowable, the presence of panel observers should be limited and closely monitored. A panel observer is an individual present during the proceedings of the SRM panel meeting who is not part of the SRM panel and cannot provide input. Panel observers are someone attempting to gain a better understanding of the SRM process, not the specific action being assessed. The individual is not an active member of the SRM panel meeting, does not provide input during the deliberations, and may not use electronic recording devices during the panel meeting. The presence of panel observers is permitted at the discretion of the project manager and/or airport sponsor. SRM panels are not public meetings and non-affected parties should not attend. Panel discussions are, by definition, pre-decisional and deliberative and not to be considered in any way an official position of any party participating in the discussion.

Respectful, candid discussions are needed for effective safety decisions. However, outside parties often adversely affect open discussions. Therefore, for training purposes only, ARP will permit FAA and airport observers; however, observers cannot provide direct input to panel discussions. Additionally, it is important to remind observers that only the signed final documentation produced by the panel is “official”. At any time, the panel facilitator or FAA project manager may revoke an observer’s invitation to witness panel activities.

4.6.3 Preparations for Panel Meetings

In preparation for SRM panels, the project manager should:

a. Ensure the airport sponsor has obtained the services of a qualified facilitator (contract or FAA).

b. Identify potential SRM panel members and confirm they will be available for the panel meeting.

c. Coordinate with the facilitator on meeting preparations, panel members, logistics, and SRM Panel Orientation briefing located in Appendix K.

d. Review the airport sponsor’s project proposal summary and ensure the facilitator distributes it to panel members at least ten (10) business days before the meeting.

e. Ensure appropriate safety data (runway incursion history, forecast aircraft activities, accident and incident history, weather, etc.) for consideration is available for the panel.

f. Contact potential ATO panel participants to determine any advance notification requirements for ATO participation. The ATO bargaining unit may require up to 30 days advance notice for member participation on an SRM panel.

g. Consult/coordinate with the region SMS Coordinator as needed.

4.6.4 Panel Meeting Logistics

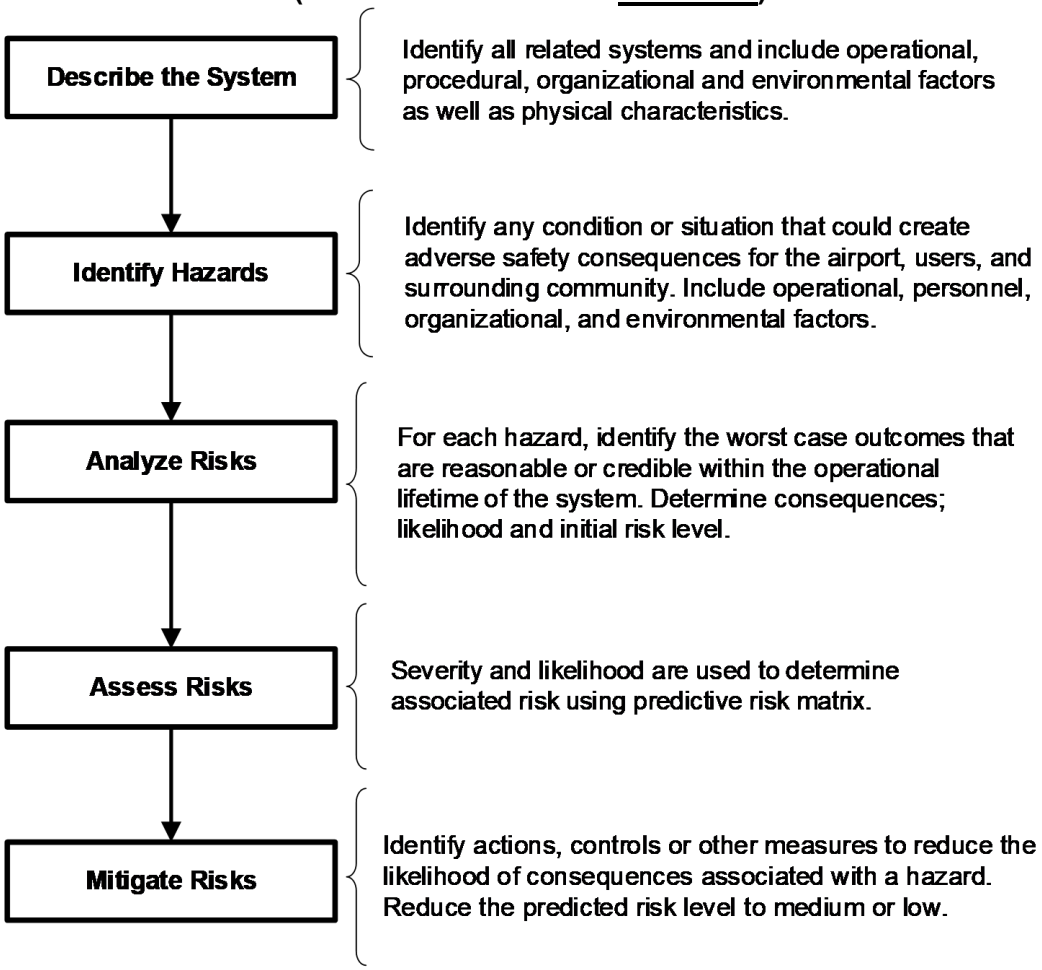
The panel meetings are usually held at the airport where the project is located. In some instances, SRM panel meetings may be held via the virtual means made available by the project manager or the facilitator. Panel meetings may also be held at FAA offices or off-site locations.

4.7 Five Steps of SRM

Consistent with International Civil Aviation Organization (ICAO) guidelines and best practices, all SRM analyses use the five steps of SRM detailed in Figure 2.

FIGURE 2 – SRM SAFETY ASSESSMENT PROCESS

(Source – FAA Order 5200.11A)



Systematically completing these steps creates a thorough and consistent safety analysis. The following sections describe each of the five SRM steps in detail. As per paragraph 4.5, when an SAS indicates, after completing the OE/AAA evaluation and screening questions, that a panel is required, the SRM panel, assisted by the panel facilitator, must complete the five SRM steps and document those findings. Paragraph 4.9 explains the documentation requirements associated with the SRM analysis.

4.7.1 Step 1: Describe the Facility or System

The first step of SRM is to describe the facility or system under analysis. FAA Order 5200.11A defines *system* as an integrated set of constituent pieces combined in an operational or support environment to meet a defined objective. These pieces include people, equipment, information, procedures, facilities, services, and other support services.

This step entails describing the operating environment in which the hazards will be analyzed. The system or facility description defines the boundaries for hazard identification. For example, the scope of the project proposal should serve as the starting point for construction projects. The description will include related systems that the proposed change may affect. Consider operational, procedural, organizational, and environmental factors as well as physical characteristics.

As mentioned above, it is important to place boundaries on the system, ensuring the panel discusses only hazards introduced or affected by the proposed change. If there is a known hazard (terrain, obscured view from ATCT, wildlife, etc.) that exists, but is not in any way altered by the proposed change, it is outside the boundaries of the SMS. An example of this is a landfill (a known wildlife attractant hazard) in the departure path of the runway being rehabilitated. If the project is not moving the departure threshold closer to the landfill or altering the departure path of aircraft in any way, that hazard should be considered outside the boundaries of the system. It is the responsibility of the project sponsor and project manager to propose the system boundaries to the panel and seek consensus. System boundaries can be achieved by recognizing the existing state defined as an expression of the various conditions, characterized by quantities, or qualities in which a system can exist.

A system description could answer the following questions:

a. Are there visual or instrument meteorological conditions?

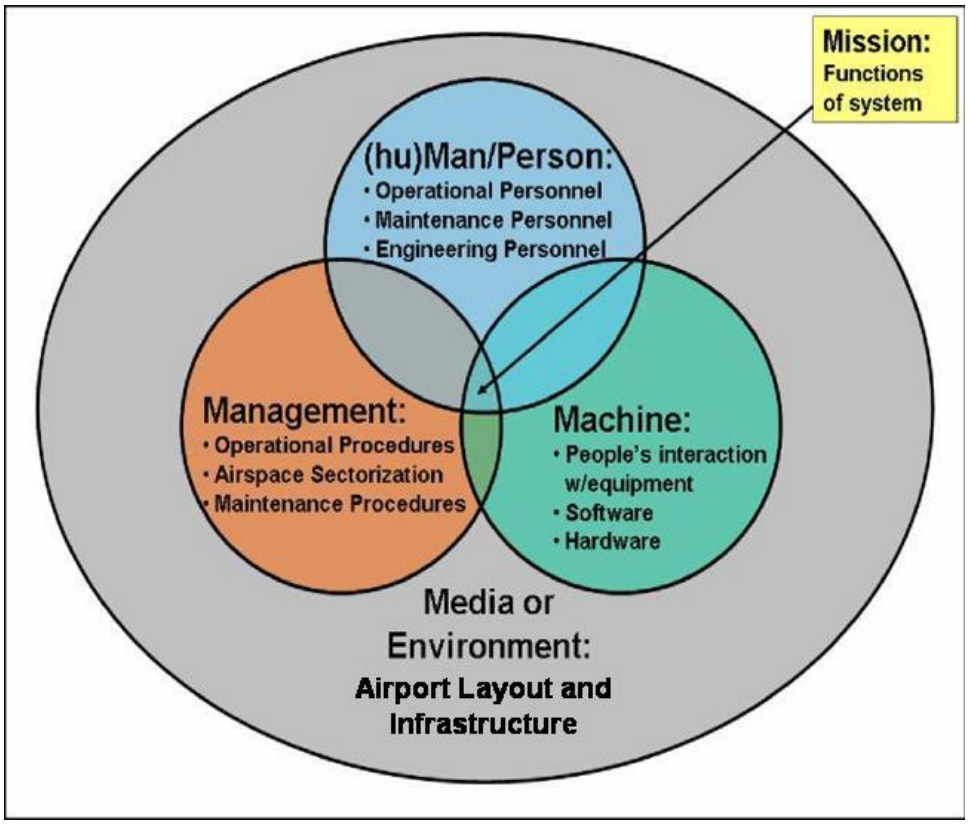
b. Are there closed or open runways?

c. Is the airfield under construction or normal operations?

While a variety of methods are available for developing a system or facility description, ARP uses the 5M Model depicted in Figure 3 as its primary method for capturing the information needed to describe the system. The 5M Model is used to deconstruct the proposed change or condition for analysis to distinguish elements that are part of, or impacted by, the proposed change or condition.

These elements later help identify sources, causes, hazards, and current and proposed hazard mitigations.

FIGURE 3 – 5M MODEL



The 5M Model analyzes five elements for impacts: Mission, Man, Machine, Management and Media.

a. Mission – A clearly defined role of the SRM panel describing, in detail, the approval or standard.

b. (hu)Man/Person – The human operators or maintainers.

c. Machine – The equipment used in the system, including hardware, firmware, software, human-to-system interface, and avionics.

d. Management – The procedures and policies that govern the system's behavior.

e. Media – The environment in which the system is operated and maintained (e.g., airport).

The panel facilitator completes (or obtains) most of the system or facility description in preparation for the SRM panel's first meeting. The facilitator can use the project proposal summary and the 5M Model to describe the system. The facilitator should work closely with the airport sponsor and/or its designee and the ADO or Regional Office to create the most accurate and credible system

description. The panel will then review the system description to begin its analysis.

4.7.2 Step 2: Identify Hazards

The second step of SRM identifies hazards in a systematic way based on the system described in the first step. FAA Order 5200.11A defines a hazard as 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 prerequisite of an accident or incident. Hazards are then assessed to determine the level of risk.

During the hazard identification stage, the panel identifies and documents potential safety issues, their possible causes and corresponding effects. As described above, it is important to set system boundaries so the panel does not spend time analyzing existing hazards unaffected by the proposed change. More complex project proposal or standards will result in a greater range of hazards. The panel usually addresses multiple hazards in a single Safety Assessment but may divide related hazards into several Safety Assessments for more complex projects.

The panel should consider all credible sources of system failure. Depending on the nature and size of the system under consideration, these may include equipment, human factors, operational procedures, maintenance procedures and external services.

There are numerous tools available to assist the panel in thorough hazard identification and analysis. However, for consistency and program oversight, ARP recommends the use of certain tools depending on the type of approval or standard. Table 1 lists the types of hazard identification and analysis tools used by ARP, describes their technique and explains when to use them. Appendix I includes examples and worksheets for each of the hazard identification tools listed in Table 1.

TABLE 1 – HAZARD IDENTIFICATION AND ANALYSIS TOOLS

Tool or Technique	Summary of Description	Appendix	When to Use
Preliminary Hazard Analysis (PHA)	The PHA provides an initial overview of the hazards present in the overall flow of the operation. It provides a hazard assessment that is broad, but usually not deep.	App. I	Airspace determinations for CSPPs, Airspace determinations for non-construction airport changes, Modification of Standards
Comparative Safety Assessment (CSA)	The CSA provides a listing of hazards associated with the proposal/approval/standard, along with a risk assessment for each alternative hazard combination considered. It is used to rank the options for decision-making purposes. The CSA's broad scope provides an excellent way to identify issues that may require more detailed hazard identification tools.	App. I	Analysis of multiple airport development alternatives associated with ALP or master plan studies
Operational Safety Assessment (OSA)	The OSA is a development tool based on the assessment of hazard severity. It establishes how safety requirements are to be allocated between air and ground components and how performance and interoperability requirements might be influenced.	App. I	Master planning for long-range planning where operational data is not available

An accurate and clear system description (from Step 1) should help the panel identify sources of hazards and develop a preliminary hazard list. The panel usually develops this list based on brainstorming early in the panel's meeting. Presumably, the list will begin as a combination of hazards, causes, effects, and system states. The facilitator and panel will need to assign each item to its appropriate category (e.g., hazard, cause, effect or system state). The resulting hazards, causes, effects, and system states can then be worked into the appropriate hazard analysis tool (Table 1).

Depending on the nature and size of the system under consideration, potential sources of hazards include:

a. Equipment (hardware and software)
b. Operating environment (including physical conditions and airspace)
c. Human operations (factor)
d. Human-machine interface
e. Operational procedures
f. Maintenance procedures

g. External services

While this step focuses on hazard identification, it should also include further analysis of the hazards to understand their causes, system state, and effects. This analysis helps the panel analyze risks in Step 4.

Causes are events occurring independently or in combination that result in a hazard or failure. The panel should identify a cause for each credible hazard identified in the preliminary hazard list. These credible hazards are then plugged into the selected hazard identification and analysis tool for further analysis. Common causes include:

a. Human error
b. Latent errors
c. Design flaws
d. Component failures
e. Software errors

FAA Order 5200.11A defines system state as an expression of the various conditions, characterized by the quantities or qualities, in which a system can exist. For ARP-related SRM analysis, this may include instrument versus visual meteorological conditions, snow, ice, or rain events versus normal conditions or operations during construction. For example, a hazard's cause or effect differs depending on whether it occurs during instrument or visual metrological conditions.

After documenting the system state, the SRM panel also evaluates each hazard and the system state context in which the hazard potentially exists to determine what already prevents or reduces the hazard's occurrence or mitigates its effects. These mitigations, or existing controls, are considered existing if they have been validated and verified with objective evidence. For example, standards or procedures required in ACs are considered existing controls. Air Traffic Control (ATC) procedures detailed in FAA Order 7110.65AA, *Air Traffic Control*, are considered existing controls. Appendix G contains a list of commonly referenced existing controls.

The effect, or outcome, is a description of a real or potential outcome or harm that could be created if the hazard occurs in the defined system state. The panel should list the credible outcomes for the hazard being analyzed. FAA Order 5200.11A defines *credible* as referring to a specific system state and sequence of events supported by data and expert opinion that clearly describes the outcome. Credible implies that it is reasonable to expect the assumed combination of extreme conditions will occur within the operational lifetime of the system.

The ARP SRM Practitioners Course (FAA Course No. 06000006) provides further instruction and guidance for potential SRM panel members on how to identify, assess, and analyze hazards in an airport environment.

4.7.3 Step 3: Analyze Risks

The third step of SRM is hazard analysis. For each hazard identified in Step 2, the panel considers the worst credible outcome (harm)—that is, the most unfavorable consequence that is realistically possible—based on the system described. However, the worst credible outcome may not be the only outcome the panel analyzes for that hazard. The panel should also consider less damaging, but more likely outcomes, in addition to the worst credible outcome. For example, an aircraft vehicle collision may be the worst credible outcome identified for a particular hazard, but the probability of that is considered remote. However, a vehicle/pedestrian deviation (V/PD) is another possible outcome of the same hazard, with a much higher probability. The panel should consider both outcomes. For the worst credible outcome (or other selected outcomes), the panel must determine the severity and likelihood of that outcome using quantitative and/or qualitative methods.

Next, the panel determines the risk of the worst credible outcome for each of the identified hazards and their system state. According to FAA Order 5200.11A, risk is the composite of predicted severity and likelihood of the potential effect of a hazard in the worst credible system state. So, to analyze risk, the panel must first determine the severity and then the likelihood of each hazard's worst credible outcome.

ARP has defined its levels of severity and likelihood in Appendix C of FAA Order 5200.11A. See Table 2 and Table 3.

TABLE 2 – SEVERITY TABLE

Effect on:	Minimal 5	Minor 4	Major 3	Hazardous 2	Catastrophic[4] 1
	Hazard Severity Classification ***Note:*** *Severities related to ground-based effects apply to movement areas only.*				
	CONDITIONS RESULTING IN ANY ONE OF THE FOLLOWING:				
Airports	No damage to aircraft but minimal injury or discomfort of little consequence to passenger(s) or worker(s)	-Minimal damage to aircraft, or -Minor injury to passengers, or -Minimal unplanned airport operations limitations (i.e., taxiway closure), or -Minor incident involving the use of airport emergency procedures	-Major damage to aircraft and/or minor injury to passenger(s)/worker(s), or -Major unplanned disruption to airport operations, or -Serious incident, or -Deduction on the airport's ability to deal with adverse conditions	-Severe damage to aircraft and/or serious injury to passenger(s)/worker(s); or -Complete unplanned airport closure, or -Major unplanned operations limitations (i.e., runway closure), or -Major airport damage to equipment and facilities	-Complete loss of aircraft and/or facilities or fatal injury in passenger(s)/ worker(s); or -Complete unplanned airport closure and destruction of critical facilities; or -Airport facilities and equipment destroyed
ATC Services	A minimal reduction in air traffic control (ATC) services Category (CAT) D Runway Incursion (RI)[1] Proximity Event, Operational Deviation, or measure of compliance greater than or equal to 66 percent[2]	Low Risk Analysis Event (RAE) severity, two or fewer indicators fail[3] CAT C RI[1]	Medium RAE severity, three indicators fail[3] CAT B RI[1]	High RAE severity, four indicators fail[3] CAT A RI[1]	Ground collision[5] Mid-air collision Controlled flight into terrain or obstacles

Effect on:	Minimal 5	Minor 4	Major 3	Hazardous 2	Catastrophic[4] 1
	Hazard Severity Classification ***Note:*** *Severities related to ground-based effects apply to movement areas only.*				
	CONDITIONS RESULTING IN ANY ONE OF THE FOLLOWING:				
Unpiloted Aircraft Systems (UASs)	Minimal injury to those on the ground Loss of UAS control and piloted aircraft were not involved	Non-serious injury to three or fewer people on the ground Loss of UAS control and piloted aircraft were involved Circumstances requiring a piloted aircraft to abort takeoff (i.e., rejected takeoff); however, the act of aborting takeoff does not degrade the aircraft performance capability	Non-serious injury to more than three people on the ground A reduced ability of the crew to cope with adverse operating conditions to the extent that there would be a significant reduction in safety margin Circumstances requiring a piloted aircraft to abort takeoff (i.e., rejected takeoff); the act of aborting takeoff degrades the aircraft performance capability Piloted aircraft making an evasive maneuver to avoid unpiloted aircraft, and the proximity from unpiloted aircraft remains equal to or greater than 500 feet	Incapacitation to UAS crew Piloted aircraft making an evasive maneuver to avoid unpiloted aircraft, and the proximity from unpiloted aircraft is less than 500 feet Serious injury to persons other than the UAS crew[7] Proximity of UAS to piloted aircraft causing conditions that would prevent continued safe flight and landing of the piloted aircraft	A collision with a piloted aircraft Fatality or fatal injury to persons other than the UAS crew[8]
Flying Public	Minimal injury to persons on board	Physical discomfort to passenger(s) (e.g., extreme braking, clear air turbulence causing unexpected movement of aircraft resulting in injuries to one or two passengers out of their seats) Minor injury to less than or equal to 10 percent of persons on board[6]	Physical distress to passengers (e.g., abrupt evasive action, severe turbulence causing unexpected aircraft movements) Minor injury to greater than 10 percent of persons on board[6]	Serious injury to persons on board[7]	Fatal injuries to persons on board[8]
NAS Equipment (with Table 3.4 of the *Safety Manage-ment System Manual*)	Flight crew inconvenience Slight increase in ATC workload	Increase in flight crew workload Significant increase in ATC workload Slight reduction in safety margin	Large increase in ATC workload Significant reduction in safety margin	Large reduction in safety margin	Collision between aircraft and obstacles or terrain

Effect on:	Minimal 5	Minor 4	Major 3	Hazardous 2	Catastrophic[4] 1
	Hazard Severity Classification ***Note:*** *Severities related to ground-based effects apply to movement areas only.*				
	CONDITIONS RESULTING IN ANY ONE OF THE FOLLOWING:				
Flight Crew	Pilot is aware of traffic (identified by Traffic Alert and Collision Avoidance System (TCAS) traffic alert, issued by ATC, or observed by flight crew) in close enough proximity to require focused attention, but no action is required Pilot deviation[9] where loss of airborne separation falls within the same parameters of a Proximity Event or measure of compliance greater than or equal to 66 percent[2] Circumstances requiring a flight crew to initiate a go-around	Pilot deviation[9] where loss of airborne separation falls within the same parameters of a low RAE severity[3] Reduction of functional capability of aircraft, but overall safety not affected (e.g., normal procedures as per Airplane Flight Manuals) Circumstances requiring a flight crew to abort takeoff (i.e., rejected takeoff); however, the act of aborting takeoff does not degrade the aircraft performance capability Near Mid-Air Collision (NMAC) encounters with separation greater than 500 feet[10]	Pilot deviation[9] where loss of airborne separation falls within the same parameters of a medium RAE severity[3] Reduction in safety margin or functional capability of the aircraft, requiring crew to follow abnormal procedures as per Airplane Flight Manuals Circumstances requiring a flight crew to reject landing (i.e., balked landing) at or near the runway threshold Circumstances requiring a flight crew to abort takeoff (i.e., rejected takeoff); the act of aborting takeoff degrades the aircraft performance capability NMAC encounters with separation less than 500 feet[10]	Pilot deviation[9] where loss of airborne separation falls within the same parameters of a high RAE severity[3] Reduction in safety margin and functional capability of the aircraft requiring crew to follow emergency procedures as per Airplane Flight Manuals NMAC encounters with separation less than 100 feet[10]	Ground collision Mid-air collision Controlled flight into terrain or obstacles Hull loss to piloted aircraft Failure conditions that would prevent continued safe flight and landing

Notes:

1. Refer to FAA Order 7050.1, *Runway Safety Program*.
2. Proximity Events and Operational Deviations are no longer used to measure losses of separation, but they are applicable when validating old data using those metrics.
3. FAA Order JO 7210.633, Air Traffic Organization Quality Assurance (QA), removed RAEs and the process for notification and interviews associated with RAEs. Any reference to RAEs in this SMS Manual is for research and historical purposes only. RAE severity indicators are as follows:
   a. **Proximity.** Failure transition point of 50 percent or less of required separation.
   b. **Rate of Closure.** Failure transition point greater than 205 knots or 2,000 feet per minute (consider both aspects and utilize the higher of the two if only one lies above the transition point).
   c. **ATC Mitigation.** ATC able to implement separation actions in a timely manner
   d. **Pilot Mitigation.** Pilot executed ATC mitigation in a timely manner.
4. An effect categorized as catastrophic is one that results in a fatality or fatal injury.
5. **Ground Collision.** An airplane on the ground collides with an object or person.
6. **Minor Injury.** Any injury that is neither fatal nor serious.
7. **Serious Injury.** Any injury that:

a. Requires hospitalization for more than 48 hours, commencing within seven days from the date the injury was received,
b. Results in a fracture of any bone (except simple fractures of fingers, toes, or nose),
c. Causes severe hemorrhages, nerve, muscle, or tendon damage,
d. Involves any internal organ, or
e. Involves second- or third-degree burns, or any burns affecting more than five percent of the body's surface.

8. **Fatal Injury.** Any injury that results in death within 30 days of the accident.
9. Refer to FAA Order JO 8020.16, *Air Traffic Organization Aircraft Accident and Aircraft Incident Notification, Investigation, and Reporting*, for more information about pilot deviations.
10. Near mid-air collision definitions are derived from FAA Order 8900.1, *Flight Standards Information Management System*, Volume 7, Investigation, which defines the following categories: critical, potential, and low potential. Refer to Section 8 of the *Safety Management System Manual* for the complete definitions of these categories.

TABLE 3 – LIKELIHOOD DEFINITIONS

	Airport Specific	Quantitative (ATC/Flight Procedures/Systems Engineering)	Domain-wide: NAS-wide, Terminal, or En route
A Frequent	Expected to occur more than once per week or every 2500 departures, whichever occurs sooner	(Probability) ≥ 1 per 1000	Equal to or more than once per week
B Probable	Expected to occur about once every month or 250,000 departures, whichever occurs sooner	1 per 1000 > (Probability) ≥ 1 per 100,000	Less than once per week and equal to more than once per three months
C Remote	Expected to occur about once every year or 2.5 million departures, whichever occurs sooner	1 per 100,000 > (Probability) ≥ 1 per 10,000,000	Less than once per three months and equal to more than once per three years
D Extremely Remote	Expected to occur once every 10-100 years or 25 million departures, whichever occurs sooner	1 per 10,000,000 > (Probability) ≥ 1 per 1,000,000,000	Less than once per three years and equal to or more than once per 30 years.
E Extremely Improbable	Expected to occur less than every 100 years	1 per 1,000,000,000 > (Probability) ≥ 1 per 10^{14}	Less than once per 30 years

Note: A cutoff point of 10-14 was established to define the boundaries of credible events for the purpose of calculating likelihood.

4.7.4 Step 4: Assess Risks

The fourth step of SRM, Risk Assessment, uses the likelihood and severity assessed in Step 3 and compares it to the acceptable levels of safety risk.

This comparison is facilitated through the predictive risk matrix. The predictive risk matrix graphically depicts the various levels of severity and likelihood as they relate to the levels of risk (e.g., low, medium, or high). The severity and likelihood assessed during the third step of SRM is then plotted on the risk matrix grid for each of the hazards assessed.

The ARP Risk Matrix is provided in Appendix C of FAA Order 5200.11A and displayed below.

FIGURE 4 – RISK MATRIX

Severity / Likelihood	Minimal 5	Minor 4	Major 3	Hazardous 2	Catastrophic 1
Frequent A	[Green]	[Yellow]	[Red]	[Red]	[Red]
Probably B	[Green]	[Yellow]	[Red]	[Red]	[Red]
Remote C	[Green]	[Yellow]	[Yellow]	[Red]	[Red]
Extremely Remote D	[Green]	[Green]	[Yellow]	[Yellow]	[Red]
Extremely Improbably E	[Green]	[Green]	[Green]	[Yellow]	[Red] * / [Yellow]

* High Risk with Single Point and/or Common Cause Failures

Key:

- High Risk [Red]
- Medium Risk [Yellow]
- Low Risk [Green]

Severity categories are listed on the horizontal axis of Figure 4, while likelihood categories are listed on the vertical axis. The colors denote the level of risk associated with the likelihood/severity combination. FAA Order 5200.11A explains the following:

a. **High Risk (red)** – High Risk is unacceptable within the ARP SMS. If a hazard presents a high initial risk, the proposal cannot be carried out unless hazards are further mitigated so risk is reduced to medium or low level and the ARP Safety Review Board recommends that ARP-1 approve the mitigations. Appendix J illustrates the format and explanation on escalating any initial high risk that has been mitigated down to a Medium or Low risk for ARP-1 acceptance/approval. The ARP SMS requires tracking and management of initial high-risk hazards and controls.

b. **Medium Risk (yellow)** – Medium risk is acceptable within the ARP SMS. A medium risk is the minimum acceptable safety objective. With medium risk, the proposal may be carried out if the risk is tracked and managed.

c. **Low Risk (green)** - Within the ARP SMS, low risk is the target. Low risk is acceptable without restriction. Low-risk hazards do not need to be actively managed but must be recorded in the SRM documentation.

The panel will plot the severity and likelihood for each hazard's worst credible outcome on the predictive risk matrix. The panel then observes where the hazards reside based on the three categories of risk (e.g., low risk or green region, medium risk or yellow region, or high risk or red region). This indicates the "initial" risk level for each hazard. If the initial risk for any analyzed hazard falls in the high risk or red region, FAA Order 5200.11A requires mitigation. Further, the signature level required for the SRM Safety Assessment depends on the initial risk level (see FAA Order 5200.11A, Table 4-1, *Safety Assessment Acceptance and Signature Requirement*).

4.7.5 Step 5: Mitigate Risks

For risks higher than acceptable levels (red blocks on Figure 4), the panel must identify ways to eliminate or reduce risk to the lowest possible level (also known as "residual risk"). Techniques to lower risk to acceptable levels may include a combination of planning and design modifications or mitigation measures. Mitigation is any action or control to reduce the likelihood associated with a hazard and its potential effects. SRM panels that identify higher than acceptable levels of risk must also develop specific risk mitigation measures and a mitigation plan as part of the completed Safety Assessment.

Mitigations to be implemented after the Safety Assessment/SRM is approved must be verified, monitored, and tracked to ensure they are properly implemented and effectively reducing the risks associated with the hazards. In the FAA, high initial risk must be mitigated. Medium and low initial risks are acceptable but may require design modification or mitigation and tracking.

Appendix G lists existing controls in place for typical hazards found in airport construction. Use this in conjunction with Table 4 of Appendix G. The panel may find it helpful to refer to this list when developing mitigations.

4.8 Implementing Mitigations Identified Through SRM

While ATO frequently uses Memorandums of Understanding (MOUs) or Memorandums of Agreement (MOAs) to ensure mitigations are completed by non-FAA organizations, the ARP SRM Safety Assessment documentation and Federal Grant Assurances ensure the airport sponsor and other FAA offices will carry through with the required mitigation. ARP project managers should consider including Safety Assessment mitigation measures as "Special Conditions" to AIP grant agreements to ensure mitigation measures are implemented.

4.9 SRM Panel Documentation

An important function of SMS is the formal documentation of hazards and risks and their acceptance. Therefore, document the SRM panel's findings in a formal, consistent manner.

A completed Safety Assessment includes:

a. Applicable completed SAS, including a roster of panel members, with signatures from the appropriate FAA official and the airport sponsor. (Sponsors sign the SAS form only if a panel is held and at the conclusion of the panel deliberations.) All panel members should provide written concurrence to the facilitator accepting the report. Concurrence such as email replies should be captured as part of the final Safety Assessment (SA) documentation.

b. Project Proposal Summary.

c. Hazard identification and analysis tool worksheet (e.g., PHA, OSA or CSA) and hazard mitigation plan completed by the panel.

d. Narrative (for any issues discussed during the panel meeting that further explain findings in the worksheet as well as for discussion of dissenting written opinions).

e. Pictures, where applicable (e.g., tower siting, airport geometric, etc.).

The intent is to capture the completed Safety Assessment and provide a means for electronically generating and completing the SAS, hazard identification, and analysis tools, and uploading applicable project proposal summaries, narratives, etc.

To avoid duplication, documentation resulting from an SRM led by ATO or AVS may be used to satisfy the requirements for SMS contained in FAA Order 5200.11A, provided the SRM addresses all ARP issues and risks.

The responsible FAA office retains completed SRM Safety Assessments on file for the life of the project.

Until the SRM Safety Assessment is final, clearly mark all pre-decisional documents as “draft” and consider internal deliberative documents not generally releasable under the Freedom of Information Act (FOIA) due to their deliberative nature.

4.10 Changes or Modifications to Previous SRM Reviews

Since airports are not static, some Safety Assessments may require revalidation or the reconvening of panels. Additionally, some mitigations required by previous Safety Assessments may prove ineffective for addressing hazards. The SMS Safety Assurance component provides feedback on when mitigations are not performing as envisioned by the SRM process.

Instances that may require revalidation or the reconvening of panels include:

a. Changes in system states, conditions, or facilities that impact the proposal or mitigations required by the panel.

b. Changes to design, or construction safety and phasing plans, that substantially change the project proposal.

c. Changing conditions that may be related to previous Safety Assessments or mitigation measures, such as an increase in the number of vehicle/pedestrian deviations, runway excursions, wildlife strikes, etc.

d. Changes to project proposals (e.g., planning proposals) resulting from environmental review.

4.10.1 Revalidating Versus Reconvening Panels

In some instances, the project manager may simply revalidate the previous Safety Assessment to determine whether the changing condition substantially affects the proposal originally assessed. Project managers should consult with their regional SMS coordinators or the Office of Airport Safety and Standards (for Headquarters-related reviews) for assistance. Revalidation may be appropriate when considering changes resulting from the environmental review.

A panel must be reconvened if conditions or changes substantially alter the system state or proposal originally reviewed and analyzed by the panel. If certain panel members are no longer available, every effort should be made to find a replacement member representing the same or similar organization.

Panels should be reconvened any time a mitigation measure is found to be ineffective in controlling risks associated with hazards analyzed by the panel.

4.10.2 Project Scope for Panel Revalidation/Reconvening

Since most changing conditions cannot be foreseen, the scope will vary depending on the change and the timing of the revalidation or reconvening of the panel.

4.10.3 Facilitation of Reconvened Panels

Facilitation is only necessary if the panel must be reconvened. If the change only requires the panel to discuss mitigations, a facilitator may not be needed. Where appropriate, the panel's discussion can be held via telephone or via a virtual conference. The project manager or regional SMS coordinator can simply document the decision made by the panel. However, acquire a facilitator if the change requires detailed analysis and discussion.

4.10.4 Risk Assessment Tool(s)

Revalidation will not require the use of risk assessment tools. However, if a panel is reconvened, the panel should use the tools originally used in the Safety Assessment.

4.10.5 Documentation

Any discussions or findings generated through reconvening panels should be documented and attached to the original SRM Safety Assessment. Signature lines should be added to the documentation appropriate to the panel's findings (see FAA Order 5200.11A, Table 4-1).

5 Triggering Actions

Within ARP, SRM applies to ARP-produced airport standards and project-specific approvals that could impact aviation safety, including the safety of air traffic or airfield operations. For the purposes of this document, we refer to these approvals and standards as "triggering actions." Besides OE/AAA, these triggers are shared across other LOBs via FAA Order 5200.11A and this Desk Reference.

The following sub-sections provide specific guidance for those triggering actions identified in FAA Order 5200.11A, paragraph 4-3. Each sub-section is similarly formatted to include applicable projects, documentation, panel guidance and recommended hazard identification and analysis tools.

5.1 Development and Update of ARP Standards

FAA Order 5200.11A states that an SRM Safety Assessment is required for the development and updating of airport planning, environmental, engineering, construction, operations and maintenance standards published in ACs. The SRM process must be completed before final approval of the new AC standard. A thorough review of relevant LOBs and stakeholder comments on ACs, and the adjudication of thereof, may remove the requirements for an SRM panel.

ARP strives to update each AC at least once every five years. While this guidance will not change this process, updates, or modifications to ACs may require further SRM, depending on the changes. Additionally, there are other triggering events that may warrant modification of an AC before the five-year target. Possible triggering events are determined by the authoring office. When updates to standards published in the ACs are under SRM review, only those particular updates can be discussed as part of the process. This does not provide an opportunity to review other components of the AC for which no modifications are proposed.

5.1.1 Applicable Projects

While any new AC development or modification to an existing AC requires the use of the Form 5200-10, *Safety Assessment Screening for Airport Standards Development (SAS-3)*, some ACs will typically require further assessment if they modify:

a. Airport geometry requirements such as:
    (1) Runway or taxiway safety areas or object free areas.
    (2) Required runway lengths or widths or taxiway widths.
    (3) Required turning radii.
    (4) Location and spacing of airfield lighting, signage, and navigational aids.

(5) Runway and taxiway separation standards.

(6) Runway obstacle free zone and runway protection zone standards.

b. Airfield drainage and pavement requirements.

c. Aircraft approach speed categories, aircraft design exit speeds for excursions, or visibility minimums.

d. Airfield marking requirements.

e. Structural, frangibility or other requirements for airfield lighting, signage, navigational aids, and applicable electric equipment.

f. Electrical load requirements for airfield lighting, signage, navigational aids, and applicable electrical equipment.

g. Requirements for approach slopes or imaginary surfaces.

5.1.2 Required Documentation

All new and modified ACs require completion of the SAS-3. Further, the completed Safety Assessment must be attached to the signature grid copy of the AC when it is submitted for ARP management review.

5.1.3 SRM Panels for ARP Standards

While new and modified ACs require completion of the SAS-3, not all ACs will require further Safety Assessment using an SRM panel. The SAS-3 checklist and instructions in FAA Order 5200.11A will help the project manager determine if there are potential hazards that require further assessment.

If the SAS-3 indicates that a panel is required, the ARP office responsible for the AC assembles the SRM panel and arranges for a facilitator. Facilitators may be FAA personnel or consultants but must not have any vested interest in the subject matter.

5.1.4 Suggested Panel Members

If an SRM panel is needed for a new or modified AC, the panel will consist of SMEs with knowledge and experience of the standard in question and other criteria such as procedures and local, state, or Federal laws potentially affected by the standard. SMEs should include personnel from ARP and other impacted FAA organizations. Depending on the standard and as appropriate, ARP should also consider including representatives from impacted trade organizations.

5.1.5 Hazard Identification and Analysis Tool(s)

The primary hazards identification and analysis tool associated with the development and modification of ARP standards is the PHA. In some cases, such as comparing risk of alternative standards, the Comparative Safety Assessment (CSA) may be helpful. Appendix I includes a sample PHA and CSA and discusses additional risk assessment tools.

5.2 Airport Planning

In airport planning studies, the primary focus is the end-state operational status (as compared to construction safety and phasing plans where the focus is on operations during construction and its phasing). The goal of SRM Safety Assessments for these projects should be to "design out" or "plan out" hazards in the planning and design phases before construction. If hazards are planned out of the selected alternative for the ALP, then the final SRM Safety Assessment should not result in mitigations that could impact the utility or efficiency of the planned development.

SRM is generally required for ALP approval and for approvals of any related MOS (see paragraph 5.4). During the alternatives development phase, SRM can help planners eliminate alternatives that could create undesirable hazards and plan appropriate safety mitigation before the planning process procedure moves too far along. A best practice is to fold safety assessments into the master planning process through collaboration with all internal LOBs that will be reviewing the ALP in OE/AAA when the plan is still in the alternatives phase, providing planners the opportunity to walk through various ideas and potential challenges to get to a final ALP.

Project managers and airport planners should consider completing SRM for any proposed MOS before determining a preferred planning alternative. If certain planning alternatives depend on FAA approval of non-standard conditions, then the FAA MOS completes the approval process to ensure the alternatives are acceptable.

The environmental overview process is another important consideration during planning, although environmental approvals typically do not require SRM. The SRM Safety Assessment processes may support the National Environmental Policy Act (NEPA) process by filtering out many alternatives that are not feasible from a safety perspective, resulting in a smaller and more meaningful list of alternatives to consider for both the environmental and planning processes.

If the environmental assessment/environmental impact statement (EA/EIS) process results in selection of an alternative that was not previously evaluated through the ARP SRM process, then a Safety Assessment must be conducted before approving the resulting ALP revision.

Note: Meeting all FAA airport design standards, as depicted in applicable ACs, does not remove the need to complete a SAS or conduct further Safety Assessment when indicated by the SAS.

Appendix B of FAA Order 5200.11A lists projects that typically do not require SRM. As-built ALPs and long-term planning beyond 15 years do not require further Safety Assessment. ARP personnel who have questions about whether a planning project requires a Safety Assessment should consult with their regional SMS coordinator or AAS-1 through the SMS Cadre.

5.2.1 Required Documentation

Planning projects should use Form 5200-8, *Safety Assessment Screening for Airport Planning and Development Projects (SAS-1)*. A SAS-1 must be completed on those projects shown on the ALP that are expected to be constructed within 15 years of the ALP approval date. That is, set the boundaries of the system to only those projects that are realistically expected to occur within 15 years of the ALP approval. Depending on the planning project, the SAS-1 form could indicate that further Safety Assessment using an SRM panel is not required. However, the project manager should always complete the SAS-1 form to document this outcome.

An SAS-1 form does not need to be completed for all development alternatives. The SAS-1 is tied to the project or ALP approval. The actual Safety Assessment and five-step SRM process can then be applied to various alternatives.

5.2.2 Timing

Under the ARP SMS, the planning process now includes the SRM Safety Assessment. As such, the project manager must factor into the consultant scope of work and project schedule adequate resources and time to complete the Safety Assessment.

Before completing the SAS-1, the appropriate FAA ADO or Regional Office should review the draft ALP and confirm it is suitable for FAA airspace review. The airspace review process is helpful when determining whether further risk assessment is required using an SRM panel.

For projects with known safety concerns, the project manager should plan for and possibly convene an SRM panel before the airspace review. If the panel is convened before the airspace review, the project manager should ensure the offices and personnel expected to review the airspace case are included on the panel. In that way, these members can address any objections anticipated in the airspace review.

5.2.3 Project Scope

The consultant scope of work should include the SRM effort by addressing the timing of the SRM Safety Assessment, required resources (e.g., panel facilitator) and time requirements. (See Appendix F for a sample consultant scope of work.)

5.2.4 Hazard Identification and Analysis Tool(s)

The recommended tool for Safety Assessments for airport planning projects is the PHA. However, there may be instances where the planning study does not have extensive operational data to support quantitative analysis for risk assessment. In those cases, the panel may use an OSA. To compare multiple alternatives, consider using a CSA. Appendix I includes a sample OSA, CSA and PHA.

5.3 Airport Construction Safety and Phasing Plans

FAA Order 5200.11A enhances review of the construction safety and Phasing Plan (CSPP). Airport sponsors must submit CSPPs for FAA review, coordination, and approval that specify the aspects of safety during construction. Requirements for CSPP reviews are contained in FAA Order 5100.38D, *Airport Improvement Program Handbook*, and FAA Order JO 7400.2P, *Procedures for Handling Airspace Matters*. AC 150/5370-2, *Operational Safety on Airports During Construction*, defines the scope of the CSPP.

Each CSPP associated with an airport grant funded development project within the Air Operations Area (AOA) requires an SRM Safety Assessment. Depending on the complexity of the project, each CSPP may also require an SRM panel. Therefore, the project manager should inform the airport sponsor of the SRM Safety Assessment requirements so they can anticipate the number of CSPPs and panel meetings and develop a plan and schedule for completing each as needed. The project manager should include this discussion in the pre-design meeting.

Preparation of the CSPP is the responsibility of the airport sponsor. Like the SAS, the CSPP is a living document that is developed over time through consultation with the ATCT and other key stakeholders. During CSPP review, the goal of an SRM Safety Assessment is to mitigate potential risk and impact to airport operations during construction. Meeting all CSPP standards does not necessarily remove the requirement to conduct further Safety Assessment with a panel.

Reviewing the CSPP will help determine whether:

a. All hazards and risks are adequately controlled, mitigation that could affect construction timing is known, and the SAS Safety Impact Checklist can be completed without requiring an SRM panel, or

b. An SRM panel is required to formally review potential hazards and devise appropriate mitigation measures.

The ARP project manager is not responsible for the CSPP development process but should provide initial direction to the airport design consultant developing the CSPP.

The CSPP review does not include an assessment of end-state system changes (e.g., a review of the airport's final condition once construction is complete). The Safety Assessment associated with planning actions is the proper time to review the end-state system. Failure to study end state changes prior to the CSPP review will likely result in project delays as SMEs and stakeholders may not find the end state acceptable. The purpose of the CSPP review is to assess how the construction activities affect airport operations versus how the end state affects airport operations. Moreover, the coordination associated with safety as it relates to the final disposition of any development shown because of a planning process

does not end with the review of an ALP by an SRM panel. General project coordination should take place across FAA LOBs by way of direct discussions and by the submittal of Form 7460-1 for the on airport development project by way of a Non-Rulemaking Airport (NRA) case in OE/AAA.

5.3.1 Required Documentation

CSPP reviews should use Form 5200-8, *Safety Assessment Screening for Airport Planning and Development Projects (SAS-1)*. This form helps determine whether further assessment is needed. If a panel is required, the panel's findings will need to be attached to the SAS-1. See paragraph 4.9, SRM Panel Documentation, for further information.

If the SAS determines that a panel is not required, the project manager completes the SAS form and keep it on file.

If the SAS determines that a panel is required, then in addition to preparing the CSPP, the airport sponsor must prepare a project Proposal Summary (Appendix H). The summary supplements the requirements of AC 150/5370-2 to ensure a complete and easy-to-understand description of the project is available to all interested parties. The airspace analysis should include a draft CSPP, depending on when the sponsor elects to begin the SRM process, but, at a minimum, includes a project Proposal Summary.

Proposed changes to the approved CSPP must be coordinated with the FAA project manager. If the project construction complies with and does not change any values or elements in a CSPP that has already been reviewed for safety impacts, it does not require further Safety Assessment. The FAA project manager may consider contacting SMEs that reviewed the CSPP to determine if additional review is necessary.

5.3.2 Timing

For complex construction projects (including those that involve movement or relocation of air traffic and/or air navigation facilities), the Safety Assessment should begin early in the project formulation process. The project manager should encourage sponsors to begin considering the SRM process when they have a concept of construction phasing and operation rather than a completed CSPP. By integrating SMS principles and concepts into the design and CSPP processes from the beginning, many of the potential hazards can be identified and addressed in lieu of convening and/or before convening the SRM panel.

The project manager is encouraged to review the CSPP at several phases throughout the design. For most cases, a draft CSPP should be ready at least six months before the receiving bids for construction. Complex projects may require submittal of the phasing plan 8-12 months prior to receiving bids. This gives the project manager time to review the CSPP, schedule the panel and, most important, include any mitigations in the project specifications before release for bid.

The airport sponsor or its design engineer must provide the draft CSPP in electronic format to allow for coordination using the airspace review (OE/AAA) system. The CSPP should clearly articulate all phases of the project and should also include detailed phase durations. If the actual beginning date of each phase is known, these dates should be included. If not, and there are conditions associated with the phase (such as "this phase will not take place in the winter season"), the timing conditions should be clearly articulated in the CSPP. Upon completion of the Safety Assessment, the project design engineer must also provide the final CSPP in electronic format. Actual schedules should be project-specific and discussed during the project design meetings with the FAA project manager, airport, and consultant(s).

Note: Airport SOP 1.00, *FAA Evaluation of Sponsor's Construction Safety and Phasing Plans Funded by the AIP or PFC Programs*, can be used when reviewing CSPP.

An OE/AAA airspace review should be initiated when starting the Safety Assessment process, before the "final" CSPP is prepared. The FAA airspace determination is needed to complete the SAS-1 and determine whether further assessment is required.

5.3.3 Project Scope

The consultant services scope of work and schedule should include preparation of the project Proposal Summary and participation in SRM panels when required. See Appendix H for a sample Project Summary and Appendix F for a draft scope of work for consultant services.

5.3.4 Hazard Identification and Analysis Tool(s)

Safety Assessments associated with CSPP reviews should use the PHA. For comparison of multiple construction design alternatives, a CSA may also be useful. Appendix I includes samples of both tools.

5.3.5 Final Documentation

The results of the completed Safety Assessment, panel findings, mitigations and other related documents should be reflected in the CSPP. The specific mitigation measures must be included and/or addressed in the final CSPP.

5.4 Modification of FAA Airport Design Standards

FAA Order 5300.1G, *Modifications to Agency Airport Design, Construction, and Equipment Standards*, details the requirements for coordination, documentation and approval of modifications of FAA design standards (MOS). Implementation of FAA Order 5200.11A does not change any provision of FAA Order 5300.1G. The Safety Assessment required under FAA Order 5200.11A and this guidance document supplements and provides additional documentation to support the FAA's review and decisions on airport sponsor MOS requests. As a reminder, MOS to AC 150/5370-10 do not require SRM documentation.

While all FAA MOS approvals require documentation that a FAA Form 5200-9, *Safety Assessment Screening for Modification of Standards (SAS-2)*, has been completed, not all MOS reviews require a panel. The SAS, OE/AAA airspace review process and MOS form will help determine if the potential hazard(s) justify the need for a panel.

The guidance In this document applies to MOS requests for temporary conditions as well as requests for long-term approval.

ARP personnel who have questions about whether an MOS requires a Safety Assessment should consult with their regional SMS coordinator or AAS-1 through the SMS Cadre.

An airport seeking FAA approval of modification to a design standard submits a request using the Modification of Standards application tool within the Airport Data and Information Portal (ADIP) at https://adip.faa.gov.

5.4.1 Process

In accordance with FAA Order 5300.1G, the Regional Office must perform an appropriate level of SRM on an MOS request. An SRM Safety Assessment is not necessary if the ADO or Regional Office determine that the requested MOS cannot be pursued, does not meet submission requirements, and is going to be terminated.

Planning for the SRM/Safety Assessment should start when the airport sponsor or consultant identifies the need for a modification or change to FAA standards or impacts to an existing non-standard condition. This can occur during airport planning studies, engineering, design or construction safety and phasing planning. The Sponsor should ensure completion of the Regional Office MOS evaluation and SRM/Safety Assessment process before moving forward with actions dependent on the MOS determination such as final planning documents or design plans. The Sponsor will need to furnish information and documentation in support of an operation safety review (OSR) that demonstrates the level of risk.

FAA Order 5300.1G explains in detail the process for review of an airport sponsor's request for an MOS. The steps for MOS review and approval are summarized below.

a. The Regional Office or ADO coordinates an airspace review and conduct an SRM screening using the SAS-2 form to evaluate the MOS from an airport operational perspective. If none of the screening questions triggers further assessment through a panel, then the project manager can sign the SAS-2 and attach it to the MOS documents. If a panel is required, the Regional Office or ADO must inform the airport sponsor that an SRM panel must evaluate the MOS before the FAA can issue approval.

b. If the Regional Office/ADO agrees with the MOS justification, including the supporting documentation and resulting residual risk from the OSR, then it completes the MOS form and forwards it to AAS-1 for Headquarters action as appropriate and consistent with FAA Order 5300.1G, Appendix A. The Regional Office/ADO should indicate on the form whether it recommends an SRM panel to evaluate the airport operational considerations of the proposed MOS. This process is automated in the ADIP MOS workflow located at: https://adip.faa.gov/agis/public/#onlineHelp/MOS

c. The appropriate ARP AAS office will determine if the MOS is adequately justified and conduct a technical review to determine if the MOS will result in an acceptable level of safety, efficiency and utility for the specific condition. AAS will also coordinate MOS requests with the FAA Flight Standards Office (AFS) as necessary.

d. ARP AAS will approve or disapprove the MOS and return it to the originating Regional Office or ADO. The AAS approval letter will reference the approval as "conditional" subject to any mitigation measures and a requirement for the Regional Office or ADO to conduct the appropriate SRM/Safety Assessment in accordance with FAA Order 5200.11A and this Desk Reference.

e. The completed record of AAS actions plus the completed Safety Assessment documents constitute the MOS approval. An MOS approval letter should be sent by the Regional Office or ADO to the airport sponsor with a copy of the supporting documents.

ARP personnel who have questions about whether an MOS requires a Safety Assessment should consult with their regional SMS coordinator or the Office of Airport Safety and Standards (AAS-1) through the SMS Cadre.

5.4.2 Project Scope

The airport sponsor and its consultant must address the Safety Assessment effort in the project scope for airport design and planning projects. It may be difficult to predict if an MOS will be required in the scoping phase. Sponsors and consultants should review the records of existing MOS on file, planning documents and, if possible, similar MOS requests for other airports to estimate the work involved. The project scope of work should identify the expected workload and estimate the additional time and cost required for the MOS review, SRM Safety Assessment, and FAA approval.

5.4.3 Prior MOS Approvals

Existing FAA-approved MOS and existing non-standard conditions are considered part of the "safety baseline" in accordance with FAA Order 5200.11A. A safety baseline is a point-in-time description of a system or facility safety, normally reflecting existing conditions. Per FAA Order 5200.11A, a safety baseline for the ARP SMS was set as of June 1, 2011. The non-standard conditions associated with a previously approved MOS will require re-evaluation as part of subsequent airport planning studies and prior to undertaking future

development projects funded with Federal assistance. MOS approvals existing before June 1, 2011, do not require a retroactive Safety Assessment. However, reevaluation of any existing MOS may be required during airport planning studies to determine their continued effectiveness or whether any new safety issues exist due to the MOS. Additionally, reevaluation of existing MOS or existing non-standard conditions may be required during engineering design for projects that require FAA approval actions that directly affect the existing MOS or non-standard condition.

5.4.4 Required Documentation

Use Form 5200-9, *Safety Assessment Screening for Modification of Standards (SAS-2)*. This form will help determine whether further assessment is needed. If a panel is required, the panel's findings will need to be attached to the SAS-2.

Sponsors must use Form 5300.1, *Modification to Airport Design, Construction, and Equipment Standards*, to initiate MOS requests. FAA Regional Offices and ADOs use this form to document their recommended approval action.

5.4.5 Timing

Project managers should notify airport sponsors to identify, coordinate and complete any proposed MOS requiring SRM Safety Assessment as early as possible in order to prevent unnecessary delay. Ideally, an MOS for airport design separation standards should be identified and approved during the planning process in connection with ALP approvals.

5.4.6 Hazard Identification and Analysis Tool(s)

The PHA is the primary risk assessment tool for conducting safety assessment of an MOS. For comparison of multiple alternatives, a CSA may also be useful. See Appendix I for a sample PHA and CSA.

5.4.7 Final Documentation

The completed SAS-2, hazard assessment tool, panel narrative, and any other relevant documents must be included with the MOS project in ADIP. A copy of the documentation should be sent to the airport sponsor with a letter noting the MOS approval and associated mitigation measures and conditions. The completed document also must be routed to the appropriate FAA approving office (Headquarters or Regional Office), in accordance with FAA Order 5300.1G.

5.5 Airspace Determinations for Non-Construction Changes

The requirement to conduct SRM Safety Assessment before FAA approval of certain non-construction changes is included in FAA Order 5200.11A as a method to address certain risks that are not captured under the other SRM triggers. These risks are changes that can occur on an airport that may introduce risk but do not require an ALP update, modification of FAA standards or other SRM Safety Assessment triggering event. Examples of these risks include changes to runway and taxiway designations, changes to airfield pavement marking and signage (excluding maintenance), risks that may originate

from the voluntary employee reporting system (see paragraph 7.2.1) and other airport changes for which the FAA believes an SRM Safety Assessment is necessary to document an FAA approval action.

5.5.1 Required Documentation

The usual FAA review and triggering action for these non-construction changes is when the airport sponsor submits FAA Form 7460-1, *Notice of Proposed Construction or Alteration*. A completed SRM Safety Assessment is required before the FAA can approve the final determination.

FAA project managers reviewing non-construction changes requiring an ARP approval action use Form 5200-8, *Safety Assessment Screening for Airport Planning and Development Projects (SAS-1)*. The SAS-1 form will help determine whether further Safety Assessment using an SRM panel is required. If a panel is required, the panel's findings will need to be attached to the SAS-1.

If the SAS-1 indicates that no further Safety Assessment is needed, then the project manager signs the SAS-1 form and place it in the appropriate file.

If the SAS-1 indicates an SRM panel is needed for further Safety Assessment, the project manager should follow the procedures outlined in Section 4 to inform the airport sponsor and convene an SRM panel. A completed Safety Assessment with panel documentation, according to paragraph 4.9, should be included in the appropriate file.

5.5.2 Timing

ARP SMS requires SRM Safety Assessment before the FAA can approve certain non-construction changes on airports that may introduce system risk. When the FAA project manager becomes aware of the proposed change, the airport sponsor should be notified immediately of the SRM Safety Assessment requirement so it can plan for the time and resources required to complete the Safety Assessment.

Before completing the SAS-1, the appropriate Regional Office or ADO should review the proposed non-construction change and confirm it is suitable for FAA airspace review. The airspace review process is an important step in determining whether further Safety Assessment is required.

For projects with known safety concerns, the project manager may recommend that the airport sponsor convene an SRM panel before the airspace review.

5.5.3 Project Scope

If the airport sponsor obtains services of a consultant, the scope of work should address the timing of the SRM Safety Assessment, required resources (i.e., panel facilitator) and work-hour requirements. The sample SRM Consultant Services in Appendix F may be useful as a guide for non-construction changes.

5.5.4 Hazard Identification and Analysis Tool(s)

The recommended Safety Assessment tool for non-construction changes is the PHA. If the proposed change has multiple alternatives, the CSA may also be useful. Appendix I includes a sample PHA and CSA.

6 Funding SRM-Related Activities

6.1 Airport Sponsors

Certain airport sponsor actions that require FAA approval will require an SRM Safety Assessment before the FAA can grant its approval. The airport sponsor must pay for costs associated with sponsor-initiated actions that require SRM. For example, if an airport sponsor requests FAA approval of an ALP, modification of standards, airspace approval of a CSPP or other FAA approval, the airport sponsor must pay the costs associated with conducting the SRM Safety Assessment.

The costs associated with SRM activities normally include preparing the project proposal documents for distribution to the SRM panel members, procuring an SRM facilitator (and note taker if needed), arranging for a suitable meeting place for the SRM panel, sponsor consultant participation and other costs related to hosting the meeting.

6.1.1 AIP and PFC Eligibility

The sponsor-incurred costs of an SRM Safety Assessment may be eligible for reimbursement under the AIP and PFC program, depending on the purpose of the Safety Assessment. If the sponsor's project or action that requires the FAA approval is AIP/PFC eligible, then the costs associated with an SRM Safety Assessment are considered AIP/PFC eligible. Conversely, if the project or action is not AIP/PFC eligible, the SRM costs are not eligible.

In cases where the SRM costs are incurred before an AIP grant, the cost is considered "project formulation cost" in accordance with FAA Order 5100.38D. AIP-eligible project formulation costs can be incurred before a grant is issued and can be reimbursed under a later grant in accordance with the AIP Handbook. If approved for use with PFC funds, the PFC-eligible project formulation costs can be funded with PFCs regardless of whether they were incurred before or after they are approved.

Mitigation measures that may be required by an SRM Safety Assessment are considered part of the project itself, not the SRM Safety Assessment process. Therefore, the mitigation costs must be included in the related project and not considered as SRM preparation cost.

6.1.2 Sponsor Participation on SRM Panels

Airport sponsor costs associated with participation on an SRM panel required for ARP approval actions are eligible as described above. In most circumstances, SRM panel costs are for project proposal document preparation and panel facilitation. The panel meetings are usually held at the airport sponsor's location; however, there may be some SRM panels that require travel. The AIP/PFC

eligibility of sponsor travel costs associated with SRM panels is a project administration cost, and eligibility is addressed in the AIP Handbook.

6.2 FAA Participation

The cost of FAA participation in an SRM panel is not AIP/PFC eligible. The FAA LOBs are responsible for their own costs to attend and participate in SRM panels. Costs for FAA-provided facilitator services are not eligible for AIP/PFC and not allowed for inclusion in reimbursable agreements. These services may be provided by the FAA only when justified by mission needs and available resources. Coordinate with the regional SMS coordinator about the availability and justification for using FAA facilitation services.

Projects affecting FAA-owned facilities (navigational aids) and that require an ATO Technical Operations Office reimbursable agreement (RA) may include the costs associated with ATO SME participation in the RA. If the RA is AIP/PFC eligible, then the SRM panel participation costs included in the RA are eligible.

6.3 SRM Hazard Tracking

ARP recognizes the Hazard Identification Risk Management Tracking system (HIRMT) for tracking hazards crossing multiple LOBs, e.g., LED lights, incursion associated with V/PD, and air traffic obstacle evaluation (O/E) perhaps resulting from a sign or marking situation. ARP has not fully developed any type of SRM tracking system that tracks basic SRM panels and the documentation resulting from their conclusion. ADOs and the Regions, through the SMS Coordinator, should ensure SRM panel hazard documentation is maintained, archived, and made accessible during any potential audit of the region's SMS program. Documentation should contain the appropriate SAS form, hazard assessment tools (PHA, CSA, and OSA), and any documented narrative produced by the SRM panel.

7 Safety Assurance

Safety Assurance provides ARP with tools to track how its SMS is performing and to continuously improve the system. Through the process of Safety Assurance, ARP will gather safety data, audit the performance of the SMS, and proactively improve the SMS. The Office of Airport Safety and Standards (AAS-1) has primary responsibility for data analysis, audits, and SMS system analysis.

7.1 Safety Assurance Steps

There are four steps to Safety Assurance:

a. Information acquisition.

b. Analysis.

c. System Assessment.

d. Development of preventative/corrective actions for non-conformance.

FAA Order 5200.11A describes these steps in detail. Additional guidance on Safety Assurance is provided below.

7.2 Implementation of Safety Assurance Processes

Safety Assurance performs analysis and assessment of the other three components in order to monitor and maintain the effectiveness of the SMS. However, earlier SMS processes and procedures (e.g., hazard tracking and documentation) must be developed in such a way that they can be integrated into the Safety Assurance processes.

Safety Assurance will primarily be the responsibility of the Office of Airport Safety and Standards (AAS-1) in accordance with FAA Order 5200.11A.

7.2.1 The Voluntary Reporting System

ARP established an Airport Voluntary Reporting System (AVRS) which can be accessed at Airports Voluntary Reporting (faa.gov). AVRS is available to all ARP employees. Use of AVRS is voluntary and encouraged. Users can choose to report anonymously (no identifying information provided) or confidentially (identifying information to be protected to the extent possible).

The purpose of the AVRS is to identify hazards that are:

a. Identified outside of the normal SRM process (e.g., no SRM triggering action is present, but the employee identifies a need for hazard mitigation through normal duties).

b. Not identified as part of the normal SRM process (e.g., the project manager and/or SRM panel did not identify a hazard, but an ARP

employee sees the hazard and recognizes it is of significant magnitude to require identification).

c. Overlooked throughout the entire safety review process.

Users can also report safety incidents, regardless of whether the realized hazard is identified in SRM documentation.

The Airport Voluntary Reporting System will enhance the existing SMS process; it is not a substitute for the SRM process.

7.2.2 Hazard and Mitigation Tracking

Hazard and mitigation tracking is the core of the Safety Assurance process. The results of SRM are expected to provide the bulk of the data for the Safety Assurance. SRM panels will ensure hazards, risk levels and mitigations are collected. Unless otherwise directed, documentation is filed in the office where the project originated and is made available as required for analysis and reports.

The project manager is encouraged to ensure the data is complete, accurate, supportable and auditable. Doing so will ensure that future analysis will provide an accurate picture of the safety environment, leading to effective corrective and preventative actions.

7.2.3 Analysis, System Assessment and Preventative/Corrective Actions

The Office of Airports Safety and Standards (AAS-1) will have primary responsibility for analysis, assessment, and development of preventative/corrective actions under ARP SMS Safety Assurance. Safety data gathering, analysis, audits (including audits of block grant states), and proactive safety measures are major components of Safety Assurance.

8 Safety Promotion

Safety Promotion includes the actions to create a work environment where SMS objectives can be achieved. The Safety Promotion element involving communication is addressed in paragraph 2.4. Another required element of Safety Promotion is the assurance that employees receive the appropriate training.

8.1 Training

ARP developed training comprised of virtual and in-class courses to assist employees and the industry in understanding and applying ARP SMS. Currently, ARP SMS training consist of three courses:

a. **ARP SMS Overview** – eLMS Course FAA 30200994 – Web-based course that introduces the components of SMS and the basic requirements of the ARP SMS. The course is available to all ARP employees via eLMS. It is available to the airport industry via https://av-info.faa.gov/DsgReg/Login.aspx.

b. **ARP SRM Practitioner** – FAA Course No. 06000006– Resident (classroom) course that provides both theory and practical application of the ARP SRM, including airport-specific examples of SRM Safety Assessments. Available to all ARP employees who will participate in, facilitate or lead SRM panels. Available to non-FAA personnel as determined by ARP management.

c. **ARP SRM Facilitation** – eLMS Course FAA 30201003–- Web-based course that explains the requirements of ARP SRM facilitation. Intended for audiences that already have facilitation skills. Available to FAA employees via eLMS and to the airport industry via https://av-info.faa.gov/DsgReg/Login.aspx.

Page Intentionally Blank

Appendix A. Glossary

Air Operations Area (AOA) – A portion of an airport in which security measures are carried out. This area includes aircraft movement areas, aircraft parking areas, loading ramps and safety areas and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures or procedures.

Aircraft Accident – As defined by the National Transportation Safety Board (NTSB) in 49 CFR Part 830, *Notification and Reporting of Aircraft Accidents or Incidents and Overdue Aircraft, and Preservation of Aircraft Wreckage, Mail, Cargo, and Records*, "an occurrence associated with the operation of an aircraft that takes place between the time any person boards the aircraft with the intention of flight and until all such persons have disembarked and in which any person suffers death or serious injury or the aircraft receives substantial damage."

Aircraft Incident – As defined by the NTSB in Part 830, "an occurrence other than an accident that is associated with the operations of an aircraft and that affects or could affect the safety of operations."

Airfield – The portion of an airport that contains the facilities necessary for the operation of aircraft.

Airport Layout Plan – A scaled drawing of the existing and planned land and facilities necessary for the operation and development of an airport.

Airport Master Plan – The planner's concept of the long-term development of an airport.

Airport Project – Defined as an airport construction project that affects the physical characteristics of the airport, ALP approvals, or review of Construction Safety Phasing Plans.

Airport Sponsor – The entity that is legally responsible for the management and operation of an airport including the fulfillment of the requirements of related laws and regulations.

Air Transportation System – 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.

Airport Traffic Control Tower (ATCT) – A facility in the terminal air traffic control system located at an airport and that consists of a tower cab structure and an associated instrument flight rules room, if radar equipped, that uses ground-to-air and air-to-ground communications and radar, visual signaling and other devices

to provide for the safe and expeditious movement of terminal area air traffic in the airspace and at airports within its jurisdiction.

Airports Capital Improvement Plan (ACIP) – The planning program used by the Federal Aviation Administration to identify, prioritize and distribute Airport Improvement Program funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

Airside – The portion of an airport that contains the facilities necessary for the operation of aircraft.

Approval – The formal act of approving a change sent by a requesting organization. Required before the proposed change is implemented.

ARP Project Manager – The ARP project/program manager, engineer, planner, or environmental specialist assigned responsibilities for overseeing and administering the project or change action for the FAA.

Aviation Safety – The state of an aviation system or organization in which risks associated with aviation activities, related to, or in direct support of, the operations of aircraft, are reduced and controlled to an acceptable level.

Common Cause Failure – A failure that occurs when a single fault results in the corresponding failure of multiple system components or functions.

Comparative Safety Analysis (CSA) – A safety analysis that provides a listing of hazards associated with a project proposal, along with a risk assessment of each alternative-hazard combination. It is used to compare alternatives from a risk perspective.

Construction Safety and Phasing Plan (CSPP) – A document that outlines procedures, coordination, and control of safety issues during construction activity on an airport. A CSPP is a plan all airport sponsors must submit, on AIP or PFC funded projects, or all projects at Part 139 certificated airports, for FAA review and approval that specifies all aspects of safety during construction. Other names for the CSPP are Construction Safety Plan, Safety Plan, or Change Proposal. Requirements for CSPP reviews are contained in FAA Order 5100.38, *Airport Improvement Program Handbook*, AC 150/5370-2, *Operational Safety on Airports During Construction*, and FAA Order JO 7400.2, *Procedures for Handling Airspace Matters*.

Control – Anything that mitigates the risk of a hazard's effect. A safety requirement is the same as a control. All controls must be written in requirements language. There are three types of controls: Verified, Recommended, and Credible.

Verified – Objectively determined to meet the design solution.

Recommended – Has the potential to mitigate a hazard or risk but is not yet validated as part of the system or its requirements.

Credible – Refers to a specific system state and sequence of events supported by data and expert opinion that clearly describes the outcome. It implies that it is reasonable to expect the assumed combination of extreme conditions will occur within the operational lifetime of the system

Environmental Assessment (EA) – An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would significantly affect the environment and thus require a more detailed environmental impact statement.

Environmental Impact Statement (EIS) – A document a Federal agency prepares to comply with the National Environmental Policy Act for major projects or legislative proposals significantly affecting the environment. It describes the negative and positive environmental effects of a proposed action and reasonable alternatives.

FAA Airspace Review – Actions specified by FAA Order JO 7400.2, *Procedures for Handling Airspace Matters.* This includes all matters relating to navigable airspace as authorized by several Federal regulations, including 14 CFR Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*, Part 152, *Airport Aid Program*, and Part 157, *Notice of Construction, Alteration, Activation, and Deactivation of Airports*.

Federal Aviation Regulations – The general and permanent rules established by the executive departments and agencies of the Federal Government for aviation, which are published in the Federal Register. These are the aviation subset of the Code of Federal Regulations.

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 of an accident or incident. A hazard might or might not result in a situation of high risk.

ICAO – International Civil Aviation Organization.

JPDO – Joint Planning and Development Office. A Federal multi-agency organization created by Congress to bring about substantial and long-term change in the management and operation of the national air transportation system (NextGen).

Landside – The portion of an airport that provides the facilities necessary for the processing of passengers, cargo, freight and ground transportation vehicles.

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

Material Change: Any change that, in the opinion of the project manager, could introduce new safety risks (that is, any change that is a result of the environmental or design process, alternative selection that changes the physical layout).

National Airspace System (NAS) – The common network of U.S. airspace; air navigation facilities; equipment and services; airports or landing areas; aeronautical charts and information services; rules, regulations, and procedures; technical information; and labor and material. Includes system components shared with the military.

National Environmental Policy Act (NEPA) – Federal legislation that establishes environmental policy for the nation. It requires an interdisciplinary framework for Federal agencies to evaluate environmental impacts and contains action-forcing procedures to ensure that Federal agency decision makers take environmental factors into account.

National Plan of Integrated Airport Systems – The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public-use airports to meet national air transportation needs.

OE/AAA – Obstruction Evaluation Airport Airspace Analysis system. A Web-based electronic data system designed to facilitate evaluation of man-made structures and airports as required by Part 77, Part 157 and guidelines established in FAA Order JO 7400.2.

Passenger Facility Charge (PFC) – A fee collected from enplaned passenger at commercial airports controlled by public agencies to be used to fund FAA-approved projects that enhance safety, security, or capacity; reduce noise; or increase air carrier competition.

Preliminary Hazard Assessment (PHA) – An overview of the hazards associated with an operation or project proposal consisting of an initial risk assessment and development of safety-related requirements.

Project Proposal Summary – A clear, concise description of the airport and proposed change. Used by stakeholders and SRM panel members (if needed) to quickly understand relevant safety and operational factors.

Reasonable – Not extreme or excessive.

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:

- *Initial:* The severity and likelihood of a hazard when it is first identified and assessed, including the effects of preexisting risk controls in the environment at that time. For safety issues, this represents the “do

nothing" scenario. For changes, this represents the "before the change" scenario.

- *Current:* The predicted severity and likelihood of a hazard at the current time. For both safety issues and changes, this is a snapshot of risk at the present moment.
- *Residual:* The remaining risk that exists after all risk mitigations have been implemented or exhausted and all risk mitigations have been verified.

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 consolidating risks into risk sets that can be jointly mitigated and combined and then used in decision making.

Risk Mitigations – Anything that reduces or eliminates the risk of a hazard's effect.

Runway – A defined rectangular area at an airport designated for the landing and taking-off of an aircraft.

Safety Assessment (SA) – A sequence of actions, ranging from project screening to holding a Safety Risk Management Panel, along with associated documentation, used by ARP to determine proper application of ARP SRM. The ARP Project Manager typically initiates the SA for projects requiring an FAA approval action. A safety analysis and/or assessment is typically performed early in the planning process before preparing a draft Airport Layout Plan, but it does not include mitigations, and often makes recommendations for further safety analysis. It is not a full ATO-compliant Safety Risk Management document, but it supports the requirements whenever it is needed by ATO.

Safety Assessment Screening (SAS) – An ARP-specified description of the safety analysis for a proposed action. It documents the evidence to support whether the proposed action is acceptable from a safety risk perspective. There are three versions of the SAS: one for Airport Planning and Development Projects, Modification of Standards, and Airport Standards Development.

Safety Risk Management document – An ATO-specified description of the safety analysis for a given proposed change. It documents the evidence to support whether the proposed change to the system is acceptable from a safety risk perspective. SRM documents are maintained by the organization responsible for the change for the life cycle of the system or change.

Safety Risk Management Panel – A group of SMEs and stakeholders assembled to assess the safety risk associated with a change or safety issue. Applies SRM methodology to ensure hazards and unacceptable risk are identified and mitigated. Identifies methodology to ensure hazards and associated safety risk are tracked throughout its life cycle.

Scope – The document that identifies and defines the tasks, emphasis and level of effort associated with a project or study.

Severity – The consequence or impact of a hazard's effect or outcome in terms of degree of loss or harm. Severity is determined by the worst credible outcome.

Single Point Failure – An element of a system or operation for which no backup (i.e., redundancy) or alternative operational procedure exists.

System – An integrated set of constituent elements that are combined in an operational or support environment to accomplish a defined objective. These elements include people, equipment, information, procedures, facilities, services, and other support services.

System of Airport Reporting (SOAR) – The FAA Office of Airports integrated database that contains airport planning, development and financial information.

System State – An expression of the various conditions, characterized by quantities or qualities, in which a system can exist.

Terminal Instrument Procedures – Published flight procedures for conducting instrument approaches to runways under instrument meteorological conditions.

Uncontrolled Airport – An airport without an airport traffic control tower at which the control of visual flight rules traffic is not exercised.

Validation – The process of proving the functions, procedures, controls, and safety standards is correct and the right system is being built (that is, the requirements are unambiguous, correct, complete, and verifiable).

Appendix B. Related Reading Material

The following documents provide more information about SMS and agency-wide SMS implementation.

a. International Civil Aviation Organization (ICAO), *Safety Management Manual (SMM)*, Doc 9859, Second Edition – 2009. Provides countries with guidance to develop the regulatory framework and supporting documents for implementation of safety management systems by service providers and development of state safety programs for regulators. [See ICAO Safety Management Manual Doc 9859 | SKYbrary Aviation Safety.]

b. U.S. Joint Planning and Development Office (JPDO), Safety Working Group, JPDO Paper No. 08-007, *Safety Management System Standard*, Version 1.4, July 30, 2008. Describes the minimum requirements for SMS in the air transportation system for Federal organizations. [See JPDO Papers section of JPDO Paper Safety Management System Standard v1.4 (yumpu.com).]

c. FAA Order 8000.369, *Safety Management System*, September 30, 2008, or current edition. Provides guidance for setting up common safety management systems within the Agency. [See http://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.current/documentNumber/8000.369.]

d. FAA Order 5200.11A, *FAA Airports (ARP) Safety Management System (SMS)*, July 20, 2021 or current edition. Describes the roles and responsibilities for implementing SMS within ARP. [See http://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.current/documentNumber/5200.11.]

e. FAA Air Traffic Order JO 1000.37, *Air Traffic Organization Safety Management System*, March 19, 2007, or current edition. Describes the roles and responsibilities for implementing SMS within the Air Traffic Organization. [See http://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.current/documentNumber/JO 1000.37.]

f. FAA Air Traffic Organization, *Safety Management System Manual*, current edition. Provides guidance, processes and tools to ATO personnel for managing the safety of the NAS, building on ATO safety management capabilities. [See http://www.faa.gov/air_traffic/publications/.]

g. FAA Order VS 8000.370, *Aviation Safety (AVS) Safety Policy*, September 30, 2009, or current edition. Describes the roles and responsibilities for implementing the AVS Safety Policy. [See http://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.current/documentNumber/VS 8000.370.]

Page Intentionally Blank

Appendix C. SRM Panel Contact Information for FAA Subject Matter Experts (SMEs)

The following lists include the position titles of individuals that project managers, facilitators, regional SMS coordinators or the Office of Airport Safety and Standards should contact to obtain FAA SMEs for SRM panels. Following the order of precedence for contacts are web-links to obtain phone numbers and personnel assigned to the positions.

Project managers should review the project Proposal Summary to determine which FAA offices may be impacted by the action. If there is a question about whether a particular FAA office may be impacted, project managers should err on the side of caution by making a request to or contacting the associated office to discuss the matter.

SRM Panel SME/Panel Members List Order of Precedence

Project Manager and/or Facilitator will make first contact with:

a. At airports with an ATCT:
    i. ATCT Manager (ATO-Terminal Services representative)
    ii. Systems Support Center (SSC) Manager (ATO-Technical Operations representative)
    iii. Terminal Radar Approach Control Manager if not co-located with ATCT (ATO-Terminal Services representative)
    iv. Air Route Traffic Control Center Manager (ATO-En Route and Oceanic Services representative)
    v. Flight Standards District Office

b. At airports without an ATCT:
    i. ATO District/Hub Manager (ATO-Terminal representative)
    ii. SSC Manager (ATO-Technical Operations representative)
    iii. Air Route Traffic Control Center Manager (ATO-En Route and Oceanic Services representative)
    iv. Flight Standards District Office

c. Depending on the project, the project manager or facilitator may also consider contacting:
    i. Mission Support for projects affecting aeronautical information management, procedures development or OE/AAA

ii. NextGen for NextGen-sponsored projects or prototypes at towered or non-towered airports

iii. Commercial Space– sponsored projects associated with commercial space activity to include preparation, pre, and post launch activity on or near Part 139 airports

iv. Runway Safety and Planning and Requirements NAS Planning Team (NPT)

If first contacts do not reply or respond, the project manager will forward their information to the regional SMS coordinator for further attempts to contact the respective organization. The regional SMS coordinator should contact:

a. ATO-Terminal Services District Manager (ATO-Terminal representative)
b. ATO-Technical Operations District Manager (ATO-Technical Operations representative)
c. ATO-En Route and Oceanic Services Service Area Director (ATO-En Route and Oceanic Services representative)
d. Flight Standards Regional Office

If the second contact is unresponsive, the regional SMS coordinator should contact:

a. For ATO-Terminal, Technical Operations, En Route and Oceanic Services, the ATO Service Center
b. For all AVS offices, the Office of Airport Safety and Standards (AAS-1) through the SMS Cadre will facilitate contact. Forward the information including parties contacted and the date and time of attempted contact for AVS participation (including Flight Standards).

If the third contact is unresponsive, the regional SMS coordinator will forward information, including the parties contacted and the date and time of attempted contact, to the Office of Airport Safety and Standards (AAS-1) through the SMS Cadre. Follow on contact will be made with the respective Headquarters Division or Director:

a. ATO-Safety, Safety Risk Management Group
b. ATO-Terminal Services, Safety Engineering Manager
c. ATO-En Route and Oceanic, Safety Manager
d. ATO-System Operations Services, Safety Risk Management Manager
e. ATO-Technical Operations, Safety Manager
f. ATO-NextGen and Operations Planning, Safety Manager
g. AST-Commercial Space Activity

h. AVS Office of Accident Investigation and Prevention, Safety Management and Research Planning Division

Contact Information (including positions and phone numbers)

For Air Traffic contacts, visit:

http://find.faa.gov/appspriv/National/EmployeeDirectory/FAADIR.nsf/AMap?OpenForm&UPG=ATO

or https://employees.faa.gov/org/linebusiness/ato/operations/terminal/

For AVS organizations, such as Flight Standards District Offices, visit:

http://www.faa.gov/about/office_org/field_offices/fsdo/

For AVS NextGen Branches, visit:

https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afs/divisions/

For AST Branches, visit:

https://my.faa.gov/org/linebusiness/ast.html

and click the “Branches” link for the desired region.

ATO SERVICE AREA TERMINAL OPERATIONS

ATO Eastern Terminal Operations

EXECUTIVE OFFICE

District Offices

- CAROLINA (CLT)
- CINCINNATI (CVG)
- GEORGIA (A80)
- INDEPENDENCE (PHL)
- MEMPHIS (MEM)
- NEW ENGLAND (A90)
- NEW YORK (LGA)
- NEW YORK TRACON (N90)
- NORTH FLORIDA (MCO)
- PITTSBURGH (PIT)
- POTOMAC TRACON (PCT)
- SOUTH FLORIDA (MIA)
- WASHINGTON (DCA)

ATO Central Terminal Operations

EXECUTIVE OFFICE

District Offices

- CHICAGO TRACON (C90)
- GATEWAY (T75)
- GULF (MSY)
- HEARTLAND (IND)
- KANSAS CITY (MCI)
- LAKE (MKE)
- LONE STAR (SAT)
- METROPLEX (D10)
- MOTOWN (D21)
- N. LIGHTS (M98)
- ORCHARD (ORD)
- SAN JACINTO (I90)
- TWO RIVERS (DSM)

ATO SERVICE AREA TERMINAL OPERATIONS

ATO Western Terminal Operations

EXECUTIVE OFFICE

District Offices

ANCHORAGE (ANC)
DENVER (D01)
GOLDEN GATE (SFO)
HAWAII-PACIFIC (HCF)
JOHN WAYNE (SNA)
LAS VEGAS (L30)
LOS ANGELES (LAX)
N. CALIFORNIA (NCT)
PHOENIX (P50)
PORTLAND (P80)
SALT LAKE CITY (S56)
SEATTLE (S46)
S. CALIFORNIA (SCT)

Appendix D. Sample Safety Assessment Screening for Airport Planning and Development Projects (SAS-1)

1. ALP approvals (including any associated environmental review)
2. Airport construction
3. Other than physical construction changes which includes non-construction airport changes

U.S. Department of Transportation
Federal Aviation Administration

FAA Form 5200-8, Safety Assessment Screening for Airport Planning and Development Projects (SAS-1)

ARP SMS ID:

1. Project Location

LOCID:

Airport Name:

Airport City, State:

Airport Sponsor Name:

Project Name & Description:

2. Safety Assessment Screening (SAS) – FAA Approval Action Type (Triggering Event)

A Safety Assessment (Form 5200-8, SAS-1) is necessary for these triggering event types.
Choose all applicable triggering events that apply (Reference FAA Order 5200.11A Par. 4-3):

- ☐ Airport Layout Plan
- ☐ Airport construction coordination, action, and approval
- ☐ Other airport changes not involving construction
- ☐ ARP requires a Safety Assessment

Proceed to Item 3.

3. Safety Assessment (SA) – ARP System Safety Impact Checklist

Choose all that apply:

- ☐ **None** - An SRM panel is *not* required. No further review is necessary. **Proceed to Item** 6.
- ☐ The Proposed action may increase aviation safety risks, with existing controls in place.
- ☐ The Proposed action may adversely affect aviation operations with existing controls in place.
- ☐ The Proposed action may pose an un-mitigatable effect on navigational aids.
- ☐ The Proposed action may impact TERPS surfaces.
- ☐ An aeronautical study (OE/AAA review) for this proposal indicates an objection to the proposal.
- ☐ Other safety impact (describe):

The Safety Impact Checklist indicates an SRM panel is warranted. Proceed to Item 4.

4. Safety Risk Management Panel

Date:

Identify the required FAA approval level for Item 7 (Reference FAA Order 5200.11A Table 4-1). Attach copy of SRMP Report to this SAS-1 Form.

Highest Initial Risk Identified: ☐ Low ☐ Medium ☐ High

Highest Residual Risk Identified: ☐ Low ☐ Medium ☐ High

Proceed to Item 5.

5. Airport Certification and Acceptance

As the airport sponsor or duly authorized representative, I hereby certify that I have reviewed and understand the Safety Assessment and Safety Risk Management processes and outcomes applied to this proposal and referenced in this Safety Assessment Screening form. I accept responsibility for the timely application of all mitigations measures identified in this assessment. I understand that the FAA considers acceptance of this assessment and its outcomes an obligation under Federal Grant assurances, regardless of FAA participation in the subject proposal. No measure contained in this assessment or its outcomes relieves the sponsor of its legal obligation under applicable FAA regulations and requirements.

Name

Title:

Signature: _____ Date:

Proceed to Item 6.

6. Aeronautical Study Data

Aeronautical Study (NRA) Number(s):

Determination Letter Date(s):

Proceed to Item 7.

7. FAA SA / SRM Approval

The proposed action was reviewed with respect to known hazards and existing controls. Potential hazards were evaluated with appropriate FAA personnel, airport operations and other aviation officials with safety responsibilities. SRM activities, when conducted, identified and evaluated hazards using procedures and processes in accordance with FAA Order 5200-11A. Documentation of SA and SRM process, when applicable, are retained with the FAA approval action documentation. All measures ensure that the project will not increase risk to the National Airspace System during the project life cycle and after the change associated with the project is complete.

Name:

Title:

Signature: _____ Date:

FAA Form 5200-8 (9/20) SUPERSEDES PREVIOUS EDITION 2 of 2

Instructions for FAA Form 5200-8
ARP Safety Assessment Screening for Airport Planning and Development Projects (SAS-1)

General

Use Form 5200-8 (SAS-1) to document the Safety Risk Management (SRM) process for airport planning and development projects. Consult the SAS-1 during the project life cycle as needed to determine and document Safety Assessment (SA) and Safety Risk Management Panel (SRMP) requirements.

Use the SAS-1 form for:

- Airport Layout Plan (ALP) approvals.
- Airport construction project review, coordination, action and/or approval for federally obligated airports. This includes review of Construction Safety and Phasing Plans (CSPP) in accordance with AC 150/5370-2, *Operational Safety on Airports During Construction*.
- Other than physical construction changes, which includes non-construction airport changes, including runway and taxiway designations, and changes to airfield marking, lighting, or signage. These reviews are required when the change is not part of a draft ALP submittal.
- Any project requiring an SA as determined by FAA Airports (ARP).

These instructions may be supplemented or replaced by program guidance for the specific triggering event. For example, more detailed instructions for completing the SAS for ALP approvals may be included in AC 150/5070-6, *Airport Master Plans*, or FAA Order 5100.38.

Purpose

A completed and signed SAS-1 documents the FAA ARP Internal SMS SRM process. This documentation helps ensure that ARP program decisions (identified above as triggering events) properly consider safety. It will also help staff determine when an SRM panel is required.

Timing

The SAS-1 should be completed prior to the final ARP action (approval, determination, etc.) for the triggering event. An Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) airspace study, if applicable, should be completed prior to completion of the SAS-1. When OE/AAA is used for coordination, then the SAS-1 needs to be completed prior to approval in OE/AAA (i.e., ALP and CSPP).

Availability

This form is available electronically at http://www.faa.gov/airports/resources/forms/.

Data Block Instructions

Block 1. Project Information. Identify the project location, airport, and the airport sponsor responsible for executing the project.

ARP SMS ID is a unique number that identifies the proposed action. It will be used to identify and coordinate the SAS-1 and for future reference. Do not use the AIP grant number, OE/AAA NRA case number, or any other existing number. Consult program guidance, regional SMS Coordinator, or the ARP Safety Management Cadre for specific instructions on assigning the Project ID. Project ID is assigned based on Fiscal Year, Region, and assigned sequence number (2019AGLXXXX).

Project Name, Description: Provide a general project type and location on the airfield. Reference detailed project information by entering "See aeronautical study information" to reference the data entered in Block 6, or an AIP grant number (for federally funded projects).

Block 2. **Safety Assessment Screening – FAA Approval Action Type.** Select the triggering event(s) for the proposed action, indicating why an SA is required.

- ***If no triggering event applies to the project, STOP. You do NOT need to fill out an SAS-1 Form. See FAA Order 5200.11A, paragraph 4-3 and Appendix B.***
- *If a triggering event applies, check the appropriate box and* continue with the SA. Proceed to Block 3.

Block 3. Safety Assessment – ARP System Safety Impact Checklist.

- ***If the NONE box is checked,*** an SRM Panel is not required. Proceed to Block 6.
- ***If any boxes are checked,*** an SRM panel is warranted. Consult ARP SOP 4.0 and the ARP SMS Desk Reference for convening, conducting, and documenting an SRM Panel. After the SRM Panel is conducted, proceed to Block 4.

Block 4. **Safety Risk Management Panel.** Identify the required ARP approval level for Block 7 by indicating the Initial and Residual Risk levels identified by the SRM Panel.

a. See FAA Order 5200.11A, Table 4-1.

b. Attach a copy of the SRM Panel report, including the panel member sign-in sheet and hazard assessment materials.

Block 5. **Airport Certification and Acceptance.** If an SRM Panel is convened, the airport sponsor must sign Block 5. Airport sponsors have direct control for controlling hazards and mitigating risks associated with airport operations. Airport sponsor signature indicates acceptance of the panel results contained in the SRM Panel report and any associated mitigation actions or plans.

Block 6. **Aeronautical Study Data.** The aeronautical study provides the review and determination documentation for the proposal.

Enter the study data from the Internet Obstruction External User Guide Evaluation / Airport Airspace Analysis (iOEAAA):

- Aeronautical study (NRA case) number(s).
- FAA Determination Letter date.

Block 7. **FAA SA / SRM Approval.** An FAA ARP representative signs the SAS. FAA approval represents an endorsement that all identified hazards have been considered and that risk levels will remain acceptable provided that risk mitigations remain in-place. Obtain the appropriate signature based on the approval level determined in Block 4.

Page Intentionally Blank

Appendix E. Safety Assessment Screening for Modification of Standards (SAS-2)

U.S. Department of Transportation
Federal Aviation Administration

Safety Assessment Screening for Modification to Standards (SAS-2)

1. Project Location

LOCID: **SMS ID**:
Airport:
City:
State:
Sponsor:
Service level:
CFR 139 date:
CFR 139 type:

2. Describe the Proposed Modification of Standards

Include the Advisory Circular and paragraph to be modified.

AC Number: Chapter: Paragraph: Page Number:

3. Standards Type

This modification applies only to the following (See Order 5300.1, Modification to Agency Airport Design, Construction, and Equipment Standards), Choose all that apply:

- ☐ Dimensional standards for Runway Safety Area (AC 150/5300-13, paragraph 305)
- ☐ Regional or state standards
- ☐ Material standards
- ☐ Construction standards

4. Proposal Screening

- ☐ A preliminary analysis indicates that an SRM review is required. (Complete pages 2 and 3)
- ☐ The proposal does not require further SRM review. (Discard pages 2 and 3)

FAA Form 5200-9 (8/20) SUPERSEDES PREVIOUS EDITION 1 of 3

5. Justification

(Include economy, durability, and aviation demand to be satisfied by the proposed modification)

Regional Review: ☐ Justified ☐ SRM Panel Recommended

AAS Review: ☐ Justified ☐ SRM Panel Recommended

6. Was the proposal reviewed by OE/AAA?

☐ Yes ☐ No - Skip to block 7 (Review in OE/AAA is required whenever the proposed MOS involves fixed or movable objects, or if airfield layout or dimensional standards are impacted.)

Case Number (Ex: 2008-ASW-1234-NRA):

Determination Date:

☐ OE/AAA review comments are attached

☐ OE/AAA review indicates an objection to the proposal

7. A review of the proposal indicates the following:

☐ The OE/AAA review indicates that an SRM panel is required.

☐ A review of the justification indicates that an SRM panel is required.

☐ An SRM panel is not required. No further review is necessary. Complete and sign block 7, discard page 3.

8. SRM Panel and Findings

Report date:

☐ Report is attached.

9. Initial Risk Determination

☐ **Low Initial Risk**. Attach supporting documentation.

☐ **Medium Initial Risk**. Attach detailed explanation of hazards.

☐ **High Initial Risk**. Attach detailed explanation of hazards. Requires review by the ARP Safety Review Board.

10. Final Risk Determination

Attach initial risk supporting document.

☐ **Low Initial Risk**. Attach detailed explanation of mitigation measures, including NOTAM requirements.

☐ **Medium Initial Risk**. Attach detailed explanation of mitigation measures, including NOTAM requirements.

☐ **High Initial Risk**. The project proposal with risk mitigation in place is unacceptable.

11. Safety Risk Management (SRM) Panel Members and Certification

We certify that we have reviewed the project documentation and have fully considered the potential hazards (and any proposed mitigation measures) before reaching this determination. Dissenting opinions concerning the determination are included in the report.

FAA Office:

Name:

Title:

Signature:

12. Airport Sponsor Certification and Acceptance

As a duly authorized representative of the sponsor of the airport identified above, I hereby certify that I have reviewed and understand the hazards and mitigation measures identified in the attached documentation. I further certify that I understand it is our legal duty, as sponsor, to ensure that any and all airport-related mitigation measures are fulfilled and documented in a timely manner. Any such commitments on our part represent an obligation under our Federal grant assurances, regardless of whether the FAA participates in the funding of any part of the Proposed Action. Nothing in the FAA's review may be deemed as relieving the sponsor of its legal obligations as owner and operator of the airport.

☐ Accept

13. FAA Safety Risk Management Approval

Hazards were identified and analyzed using standard procedures and processes in accordance with FAA Order 5200.11A. Mitigation measures, including draft NOTAM requirements, if necessary, are attached and are included with the formal FAA project approval action. These measures will help ensure safety levels are maintained at acceptable levels both during and after the proposed construction and non-construction airport changes.

☐ Accept

Instructions for FAA Form 5200-9
ARP Safety Assessment Screening for Modification of Standards (SAS-2)

General

Use Form 5200-9 (SAS-2) to document the Safety Risk Management (SRM) process for Modification Of Standards (MOS) approvals. The SAS should be completed and signed as part of the workflow in the Airport Data and Information Portal (ADIP) MOS Tool. ADO completes SAS-2 and forwards to the Region. The Region accomplishes coordination with FAA Headquarters (HQ) for final disposition. Regardless of whether the Region or HQ is final approving authority, the SAS-2 is completed by the ADO. Access the tool and instructions under quick links online help at https://adip.faa.gov/agis/. These instructions may be supplemented or replaced by program guidance for the Modification of Standards process. See FAA Order 5300.1 (latest version), *Modifications to Agency Airport Design, Construction, and Equipment Standards.*

Purpose

A completed SAS-2 documents the SRM process for the FAA Office of the Associate Administrator for Airports (ARP). It is intended to ensure that ARP program decisions, including final approval of MOS, properly consider safety. It will also help staff determine when a project requires an SRM panel.

Timing

Complete the SAS-2 in the ADIP MOS Tool as part of the MOS workflow. ADIP will store Safety Assessment data. Hard copies are optional. **Note:** Completion of the SAS-2 includes uploading the SAS-2 document or completing the SAS-2 form within the MOS project.

Availability

This form is available electronically only through the ADIP MOS Tool at https://adip.faa.gov/agis/.

Appendix F. SRM Consultant Services

Use this appendix as a guide for preparing consultant services scopes of work for airport planning and design/development services. Specific language should be tailored to the circumstances and requirements of the project and SRM. There are two types of services that may be acquired for SRM:

1. **Facilitation Services.** Facilitators are used for the SRM panel meeting. Facilitator services must ***not*** be provided by the design/planning consultant or directly by the airport using internal employees or others with a specific interest in the airport. However, the airport sponsor can acquire facilitation services of an independent contract as part of the project formulation process. (Refer to paragraph 4.6.1 for more information on panel facilitators.)
2. **SRM Support Services.** These services can assist with preliminary data collection, preparation of the project Proposal Summary, preliminary coordination meeting and documentation of the SRM Safety Assessment.

1. Facilitation Services

a. General Requirements and Expectations

SRM panel meeting facilitators must become familiar with the latest policies and programs of the FAA Office of Airports (ARP) before beginning panel meeting preparations. Therefore, facilitators will:

- Complete the FAA SMS Overview course (paragraph 8.1).
- Complete the FAA SRM Panel Facilitation course (paragraph 8.1).
- Consult with the ARP project manager and regional SMS coordinator about pertinent issues and current SRM best practices.

The primary purpose of the facilitator is to assist the formal SRM panel meeting by:

- Ensuring that all relevant perspectives are considered and by building group consensus on the findings of the panel.
- Managing conflicts that arise during the panel meeting, including biased observers and dissenting opinions.
- Working with the FAA project manager who directs and guides the SRM panel to ensure a complete and unbiased safety case.

Additional services provided by the facilitator may include:

- Meeting logistics, including time, place and agenda.
- Assembling safety data and listing of existing controls (mitigation measures) for distribution to panel members in advance of the panel meeting.

- Ensuring the project Proposal Summary (Appendix H) is completed and distributed to panel members before the start of the meeting.
- Assembling preliminary data collection and data analysis (such as airport operational statistics, airport weather statistics, airport use schedules and past planning data) as required by the sponsor or project manager before convening the SRM panel.
- Notifying and communicating with panel members after they are identified to ensure their attendance at the meeting. (See paragraph 4.6.)
- Record information as needed during the panel meeting. This item should not be performed directly by the facilitator but may be accomplished by a technical writer or others provided by the facilitator.
- Preparing final SRM documents, including panel deliberations, SAS, safety assessment tools and output from the Safety Risk Management Tracking System (SRMTS). This item may be accomplished by a technical writer or others as provided by the facilitator.

b. **Qualifications**

- SRM panel facilitators should possess (1) broad knowledge of airport development and aviation and (2) specific facilitator skills and facilitator training. Airport and aviation knowledge includes an understanding of the airport planning and development process used by the FAA, airport master plans, airport layout plans, the Airport Improvement Program (AIP), federal environmental requirements, approach procedures, airport operations and navigational aids.
- Facilitators should also have completed a formal facilitator training program that is accredited for covering the core Certified Master Facilitator™ (CMF) Competencies of the International Association of Facilitators (or equivalent). These competencies can be found at the following link: https://www.iaf-world.org/site/sites/default/files/publications/IAF%20Core%20Competencies.pdf
- Regardless of prior experience with SMS, all facilitators are expected to complete the ARP SMS Overview and Facilitation course and to be current with ARP policy on SMS and SRM panels before facilitating any SRM panel meeting.

c. **Acquiring Facilitator Services**

- Because facilitators need to be neutral without bias for the outcome of the SRM panel, they must not be chosen from airport sponsor staff, consultants supporting the project proposal or any other group with a specific interest in the airport.
- For procurement of facilitator services, airport sponsors should follow their small purchase procedures. (AC 150/5100-14, *Architectural, Engineering,*

and Planning Consultant Services for Airport Grant Projects, does not apply to facilitation services.)

- Facilitator services may also be available from a pool of FAA-trained facilitators, if supported by mission needs and resource availability. This may be appropriate for certain controversial projects where the FAA (project manager) believes that it would be difficult for the airport to obtain unbiased facilitation services.
- In any case, the facilitator is expected to meet the qualifications of paragraph 1b.
- Consult with the ARP project manager and/or regional SMS coordinator to determine if FAA-provided facilitator services are available and warranted and for help finding contract services.

2. SRM Support Services

a. **Preparation of SRM Safety Assessment Documents**
Coordinate with the FAA project manager and provide the following in accordance with this guidance document:

- Construction safety and phasing plan(s) (CSPP) for each phase of construction projects in accordance with AC 150/5370-2, *Operational Safety on Airports During Construction*.
- Project Proposal Summary(s) for each CSPP (see Appendix H).
- Safety data and simulation reports and studies that would assist with hazard identification and risk assessment of the project proposal.
- A safety assessment schedule of milestones, beginning at the pre-design/planning conference through FAA approval of the SRM Safety Assessment. The schedule should include dates for preparation of the draft CSPP, project Proposal Summary, OE/AAA airspace coordination (allow minimum of 45 days) and selection of SRM panel members.
- SRM panel meeting documentation. (See paragraph 4.9.) Record SRM panel findings of hazards, risks, and mitigations.

b. **Meetings**

- Attend design safety assessment/coordination meetings with stakeholders and representatives of the FAA with operational and safety responsibilities as identified by the FAA project manager.
- Attend and provide technical writer/note-taking services for the SRM panel meeting(s), if necessary.

3. AIP Considerations

Be sure to anticipate the number of potential SRM panels and meetings needed to meet SRM requirements and ensure that a consultant's scope of work (SOW)

contains a place holder for this work.[1] Since SRM panels are expensive and time-consuming, be sure to anticipate SRM panels only when they are truly needed and will contribute to safety enhancement. The objective is to anticipate and plan for added effort early in the project formulation process.

a. **Airport Construction.** Multiple-phase AIP development grants might require separate CSPPs and SRM for each. Be sure to identify and include the development of multiple CSPPs and SRM review in the consultant services contract. Work on subsequent phases can begin at any time and is eligible for AIP participation as project formulation costs (see paragraph 6.1.1). Also be sure that design-only AIP grants include provisions for development, coordination and SRM for each anticipated CSPP.

b. **Airport Planning.** Airport planning normally involves several airfield development alternatives that need to be included in an SRM review. The best approach is to complete a CSA for each alternative during one SRM meeting. However, large and complex airport planning studies may require several SRM panels to allow for a thorough analysis of each alternative before the selection of the proposed development plan.

c. **Modifications of Standards.** Some airports may need multiple SRM reviews of existing and proposed modifications of standards in connection with airport planning (ALP) or development projects. It should be possible to combine SRM for multiple MOS proposals, particularly when they are in physical proximity to one another. However, complex and congested airfields may require multiple SRM panels for a thorough analysis of all MOS proposals.

[1] This is especially true for planning projects because planning grants cannot be increased.

Appendix G. Preliminary Hazards and Existing Controls for Construction

This appendix contains preliminary findings of a specific national Safety Risk Management Decision panel. It attempted to identify principal component hazards associated with typical airfield construction projects. The numbered hazards in Table 4 are illustrated in Table 5 to show the hazard association with existing control documents. The data is not sufficient to apply nationally, but these hazards may be helpful for SRM analysis at the project level. SRM panels must apply local factors and reassess initial risk. The SRM panel is not restricted to the findings included here.

TABLE 4 – PRELIMINARY HAZARD LIST WITH RISK LEVEL

Hazard Number	Hazard	Initial Risk	
APCONST-001	Foreign Object Damage/Debris	3D Low	
APCONST-002	Loss of Situational Awareness by the Pilot: Change in Airport Geometry	2D Medium	
APCONST-003	Loss of Situational Awareness by the Pilot: Continuation Bias/Complacency	2D Medium	
APCONST-004	Loss of Situational Awareness by the Pilot: Construction Light Pollution	2E Low	
APCONST-005	Loss of Situational Awareness by the Pilot: Visual Cue Saturation	2D Medium	
APCONST-006	Loss of Situational Awareness by the Pilot: Complex Taxiing Instructions	2D Medium	
APCONST-007	Loss of Situational Awareness by the Pilot: Insufficient/ Ineffective/Inaccurate Notification to Users/Stakeholders	2D Medium	
APCONST-008	Loss of Situational Awareness by the Pilot: Interference or Loss of NAS Systems	3D Low	
APCONST-009	Loss of Situational Awareness by Controllers: Complexity	3D Low	
APCONST-010	Loss of Situational Awareness by Controllers: Interference or Loss of NAS Systems	4C Low	
APCONST-011	Loss of Situational Awareness by Controllers: Line of Sight	5D Low	
APCONST-012	Loss of Situational Awareness by Vehicle Operators/Personnel	3D Low	
APCONST-013	Increase/Changes in Wildlife Activity	4D Low	
APCONST-014	Penetration of Protected Surfaces (Airport Design, Terminal Instrument Procedures (TERPS), and others)	5C Low	

Note: The numbered hazards in the first column of Table 4 are illustrated in Table 5 to show the hazard association with existing control documents.

TABLE 5 – HAZARDS ASSOCIATION WITH EXISTING CONTROL DOCUMENTS

Existing Controls	Hazards													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
AC 150/5300-13, *Airport Design*		X												
AC 150/5340-1, *Standards for Airport Markings*		X	X		X	X	X			X	X	X		X
AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*			X									X		
AC 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports*													X	
AC 150/5370-2, *Operational Safety on Airports During Construction*	X	X			X		X	X	X	X	X	X	X	X
AC 150/5200-18, *Airport Safety Self-Inspection*	X													
AC 150/5340-18, *Standards for Airport Sign Systems*		X	X		X	X	X			X	X	X		X
AC 150/5210-24, *Airport Foreign Object Debris (FOD) Management*	X													
Vehicle Operator Intervention									X				X	
Airfield Operations Monitoring	X			X						X	X			
Air Traffic Controller Intervention		X	X	X		X	X	X			X	X	X	X
Operational Supervision									X					
Pilot Intervention		X	X		X	X	X	X	X	X	X	X	X	X
Construction Safety Plan									X					
7110.65AA, *Air Traffic Control*									X					
AC 91-73, *Parts 91 and 135 Single Pilot, Flight School Procedures During Taxi Operations*		X	X			X	X							
AC 120-74, *Parts 91, 121, 125, and 135 Flightcrew Procedures During Taxi Operations*		X	X			X	X							
ATIS (Automated Terminal Information Service)		X	X				X			X	X		X	X
7210.3, *Facility Operations and Administration*									X					
7210.56, *Air Traffic Quality Assurance*									X					
JO 6000.15, *General Maintenance Handbook for NAS Facilities*								X		X				
JO 6000.50, *National Airspace System (NAS) Integrated Risk Management*								X		X				
Ops Specs									X					

Existing Controls	Hazards													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Redundant Systems								X		X				
Part 139	X			X			X		X		X	X	X	X
Airport Rules and Regulations														
Briefings (Air Transport Association of America (ATA), Pilot, Air Carrier Read File)		X	X		X	X	X				X			X
Access Control Training														
Physical Barriers														
Vehicle Marking /Lighting														
Visual Diagrams and Charts		X	X		X	X	X			X	X	X		X
NOTAMs		X	X		X	X	X			X	X	X		X
Wildlife Management Plan													X	
Ground / Air Surveillance									X					X
Pilot Weather Reports (PIREPS)	X			X										
Airfield Inspections	X													
Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*	X	X		X	X		X		X	X	X	X		X
Airport FOD (Foreign Object Debris) Program	X													
JO 7400.2, *Procedures for Handling Airspace Matters*	X	X		X	X		X		X	X	X	X		X
OE/AAA Airspace Procedures	X	X		X	X		X		X	X	X	X		X
7050.1, *Runway Safety Program*		X				X								
RSAT (Runway Safety Action Team)		X	X		X		X							
JO 7110.532, *Taxi and Ground Movement Operations*		X	X		X	X	X							
AIM (Airspace and Aeronautical Information Management)		X	X											
CAST (Commonly Used Safe Operational Practices for Taxi Safety)				X										
Facility Standard Operating Practices									X					
Status Information Area (SIA)										X				
System Status Indicators										X				
JO 6480.4, *Airport Traffic Control Tower Siting Process*											X			

Existing Controls	Hazards													
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Pre-construction Meetings												X		
Part 121, *Operating Requirements: Domestic, Flag, and Supplemental Operations*; and Part 135, *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons On Board Such Aircraft*; Operator Driver Training												X		
AC 70/7460-1, *Obstruction Lighting and Marking*														X

Note: The numbered hazards in the first column of Table 4 are illustrated in Table 5 to show the hazard association with existing control documents.

Page Intentionally Blank

Appendix H. Sample Project Proposal Summary

Proposal Summary

The Project Proposal Summary is clear and concise description of the proposed project or change that is the object of the SRM. It is most applicable for airport layout plans, construction safety and phasing plans and modifications of standards. The Project Proposal Summary allows SRM panel members as well as anyone reviewing the proposal to quickly understand relevant operational and safety factors. Although they are SMEs for their organizations, some SRM panel members may not have the technical expertise to easily grasp a confusing set of construction or ALP drawings. Therefore, simple, color-coded drawing are most effective for panel use. Also, it is important to provide enough background information to provide a quick reference for panel members and others who are asked to review the proposal.

Present the material in a manner that is consistent with SRM Step 1, Describe the Facility or System (see paragraph 4.7.1). The SRM panel (if needed) may want to revise or append the SRM system description, but the Project Proposal Summary should provide a good start for the assessment.

a. **System Description.** Start by describing the physical characteristics of the airport. Proposals with a limited scope should include an airport description because even small system changes can cascade to impact the entire airport. The system description should include the following:

   i. A brief description of airport characteristics, including airport type, location, runways, aircraft fleet usage and aviation services provided by the airport. Be sure to include navigation (instrument capabilities, etc.), as well as airport traffic control and other services provided by the airport.

   ii. A current, annotated airport sketch showing the latest available airfield configuration and aircraft service areas. If the proposal involves a small section of the airfield, be sure to identify the area on the sketch.

   iii. Include a legible copy of the FAA Airport Master Record, Form 5010-1, as an appendix. FAA airport master records are available at http://www.faa.gov/airports/airport_safety/airportdata_5010/.

   iv. Any other drawings and information that describe unique airport characteristics. For example, if a departure procedure is impacted by significant off-airport obstructions, be sure to include a complete description of the nature and extent of the obstructions (including drawings and photographs as necessary).

   v. For proposed MOS, include detailed drawings of the existing conditions showing setback lines and critical areas that are the subject of the proposal.

Three-dimensional renderings can be valuable for describing airspace clearance requirements.

b. System States. Describe the operational characteristics of the airfield. Include weather, traffic flow and air traffic and airport operational procedures for various weather and wind conditions. Be sure to include visibility and wind data as well as snow accumulation and removal procedures if applicable. Include weekly and seasonal scheduled air carrier operations and special events that could impact airfield operations, such as air shows. Taxiway flow diagrams may be useful for describing complex or unusual ground traffic procedures.

c. System Changes. The project proposal may or may not include system changes.

i. For selected airport planning studies, SRM may be appropriate for preliminary planning to identify existing hazards and risks before identifying alternatives for further study. These studies are usually directed at situations where existing hazards may pose risks that should be reduced or eliminated. An Operational Safety Assessment is the typical SRM tool employed for these situations. Therefore, in this case, do not include system changes in the project proposal.

ii. ALPs usually show airport development stages over a period of time, where each stage represents an incremental airport improvement that may or may not require further development. For example, Stage I of an ALP might include a runway extension and Stage II, a new parallel runway. The airport may choose to complete Stage I and never pursue Stage II or might decide to bypass the runway extension and proceed straight to Stage II. Therefore, the system changes should be described in terms of discrete improvements that are not necessarily dependent upon one another. Each stage can be shown on separate drawings or clearly indicated by color coding on a single drawing. The objective is to clearly show the end-state for each airport development stage for reviewers and panel members. Be sure to identify facilities that will be permanently removed from service for each stage.

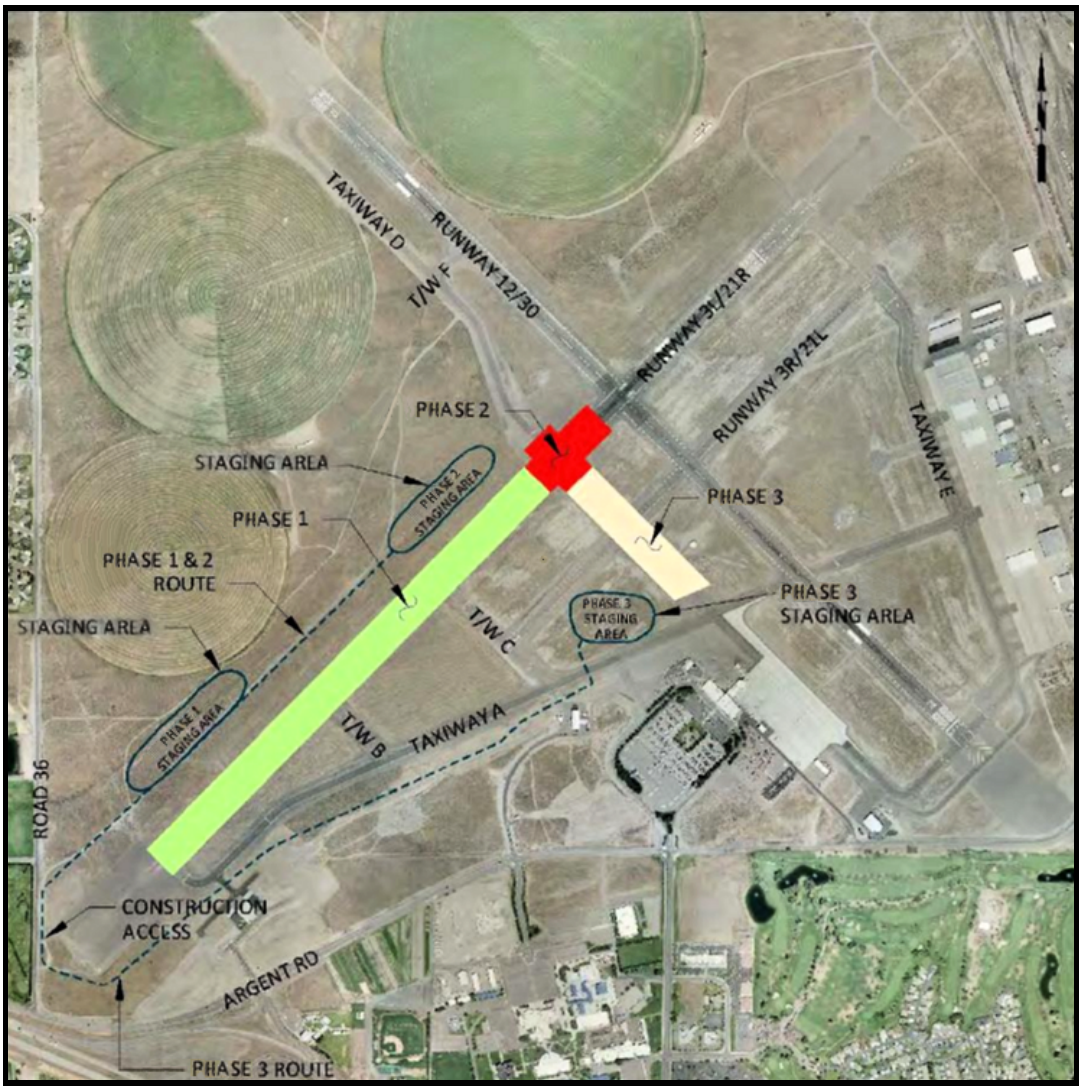
iii. Construction safety and phasing plans typically involve many temporary system changes as facilities are closed, constructed, and reopened. Each phase of the construction project should be clearly depicted, including temporarily closed facilities and alternate (temporary) taxiway, construction equipment movements and ground vehicle movements. Critical control and access points should also be shown.

iv. An MOS should clearly depict the proposal and how it relates to the standard (penetration, etc.). Be sure to include drawings that show all adjacent facilitates that may be impacted by the MOS. SRM for an MOS assumes the modification is already justified because there is no other available alternative that meets standards. Therefore, the system change should not include the justification or data supporting the justification to avoid confusion with reviewers and panel members. SRM for an MOS looks at circumstances that may not be readily apparent when the MOS was proposed. Typically, this

means impacts on the operation of related facilities and systems on the airfield.

v. The goal of the Proposal Summary is a convenient and easily understood reference for anyone involved in project coordination and analysis, including SRM panel members. Therefore, the Proposal Summary should be prepared on letter size sheets. Consider 11″x17″ pullout sheets for drawings so they are easy to read and understand. These can be supplemented with large blow-up drawings for reference during the panel meeting. However, be sure that large drawings that might be posted on the wall are consistent with the Proposal Summary that is handed out at the meeting. The following pages provide sample sections of the Project Summary.

FIGURE 5 – ALL CONSTRUCTION PHASES



The total construction duration in calendar days is 105. The following is an approximate schedule for this project, which is subject to project funding:

Construction Phase	Appropriate Construction Window	Number of Days	Work Phase Constraints
Phase One	MM/DD/YY to MM/DD/YY	20 work days (30 calendar days)	No weekend work permitted
Phase Two	MM/DD/YY to MM/DD/YY	20 work days (30 calendar days)	Partial night work
Phase Three	MM/DD/YY to MM/DD/YY	30 work days (45 calendar days)	No overlapping with Phase 2

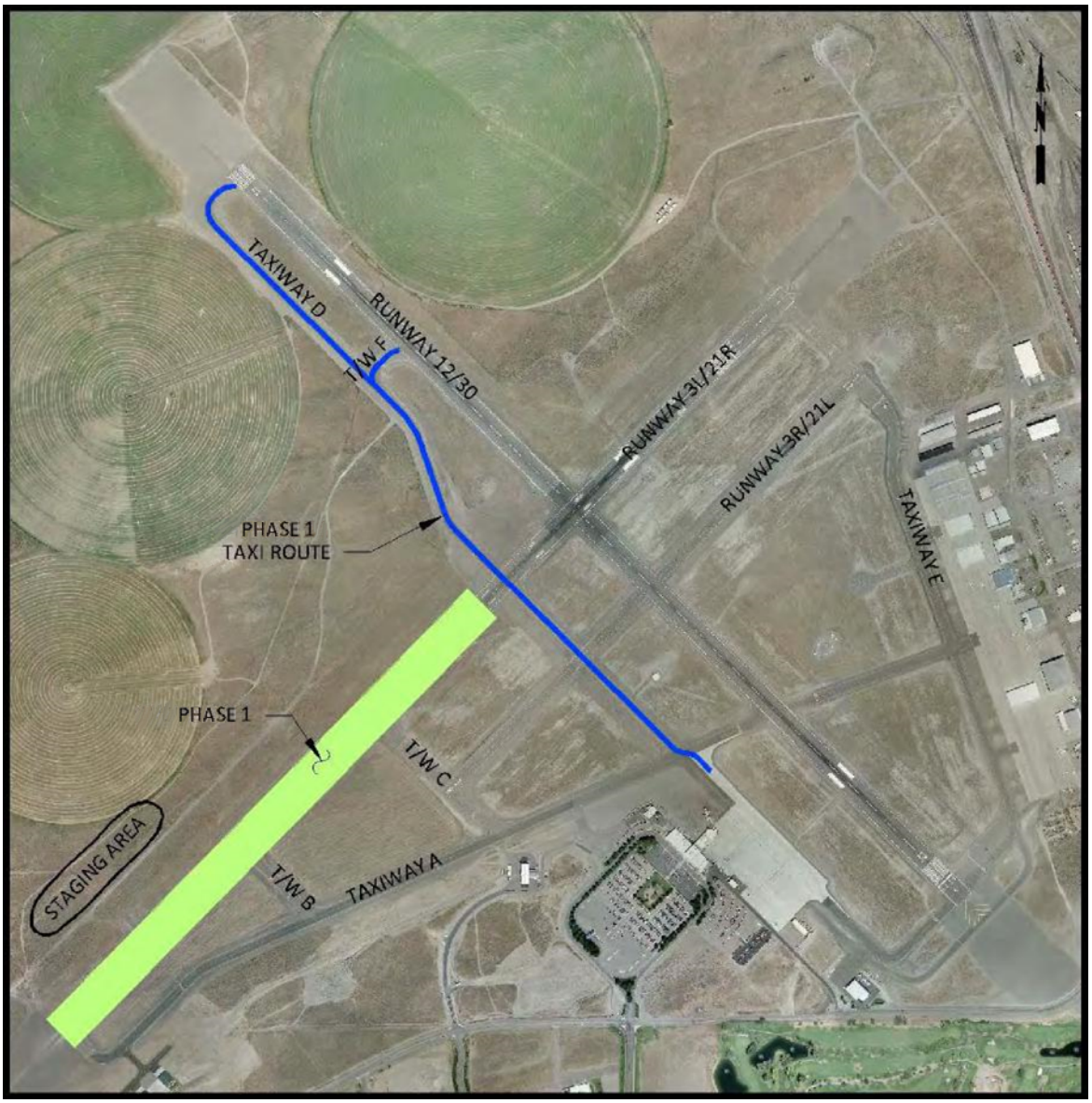
Phase One

Phase One will consist of a two-inch asphaltic pavement overlay from the end of Runway 3L to within 250 feet southwest of the intersection of the centerline of Taxiway D and Runway 3L-21R. The approximate dimensions of this overlay will be 150 feet wide by 4480 feet long.

Phase One is shown in Figure 5, which includes the taxiway routes for aircraft. The duration of this Phase is 20 working days (30 calendar days).

Note: Aerials, drawings, or similar computer generate pictures are encouraged for each individual phase of the construction.

FIGURE 6 – PHASE ONE CONSTRUCTION ENHANCED DETAILS



Page Intentionally Blank

Appendix I. Safety Assessment Tools

Tools to assist the Safety Assessment include the Preliminary Hazard Assessment (PHA), CSA (Comparative Safety Assessment) and OSA (Operational Safety Assessment).

The forms should be completed (as needed) by SRM panels to analyze the hazards, develop appropriate mitigations and determine the residual level of risk for each hazard. Each SRM panel must complete a minimum of one worksheet (PHA, CSA or OSA). Additional forms may also be added to the SRM documentation if the panel or project manager believes they would improve the safety assessment.

Preliminary Hazard Assessment (PHA)

The PHA provides an overview of the hazards associated with an operation or project proposal consisting of an initial risk assessment and development of safety related requirements. Example I-1 and Example I-2 illustrate what the PHA looks like with language included to reveal what a completed PHA looks like.

PRELIMINARY HAZARD ASSESSMENT (PHA) WORKSHEET (EXAMPLE I-1)

Preliminary Hazard Analysis

SMS ID: **Airport:**

Locid: **City:**

Project Manager:

Description:

1 Hazard ID	2 Hazard Description	3 Causes	4 System States	5 Existing Controls	6 Justification/ Supporting Data	7 Effects	8 Severity	9 Severity Rationale	10 Likelihood	11 Likelihood Rationale	12 Initial Risk	13 Mitigation	14 Mitigation Responsibility	15 Predicted Residual Risk
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														
29														
30														

Sample Preliminary Hazard Analysis (PHA) (Example I-2)

Sample PHA					
Project Title:					
Additional Project Information:					
Detailed Description of Project:					
Order/Policy:					
① Hazard Name	② Hazard Description	③ Cause	④ System States	Existing Controls: ⑤ Existing Controls	Existing Controls: ⑥ Justification/Supporting Data
PLC touch screen: Loss of control	Loss of control of 8 PLC touch screen in tower cab. User cannot control XYZ System at critical time.	Loss of control occurs due to: Hardware failure/ malfunction Software failure/ malfunction Human error Electrical short occurs Loss of all power	System maintenance occurring during the operation Aircraft on final approach under adverse visual conditions	Training will be provided to ATC for contingency procedures to ensure situational awareness while using XYZ System. Pilot will raise the minimum approach, in accordance with the operational specification according to approach procedures as designated in the Airport (specific) Approach Chart(s). XYZ System will comply with FAA requirements for critical and essential power (SR-1000 XYZ System Requirement Specifications 3.7.4. Facilities). ATCT will use 7110.65 procedures for validating aircraft ID, position, and altitude. Pilot will follow CFR 91.175, CFR 91.185, CFR 97, and CFR 91.3 as applicable for loss of runway lighting dependent on type and phase of approach to landing aircraft. The XYZ System will comply with reliability and availability requirements of NAS-SR-1000, paragraph 3.8.1 for failures, XYZ System anomalies, and malfunctions, in critical, essential, and routine services. A redundant touch screen will be provided in Tower C.	(Evidence that the existing controls are valid and verified)

⑦ Effects	Initial Risk: ⑧ Severity	⑨ Severity Rationale	⑩ Likelihood	⑪ Likelihood Rationale	⑫ Initial Risk	⑬ Mitigation
Temporary loss of function	4 Minor	due to a slight reduction in safety margin	C Remote expected to occur xx often	based on subject matter expertise and/or operational data	4C	

⑭ Safety Requirements/Mitigation Responsibility	⑮ Predicted Residual Risk

Comparative Safety Assessment

Purpose

The Comparative Safety Assessment (CSA) provides decision makers with a listing of all potential hazards along with a risk assessment for each alternative hazard combination that is considered. It is used to rank the options for decision-making purposes. The CSA's broad scope is an excellent way to identify issues that may require more detailed hazard identification tools.

Method

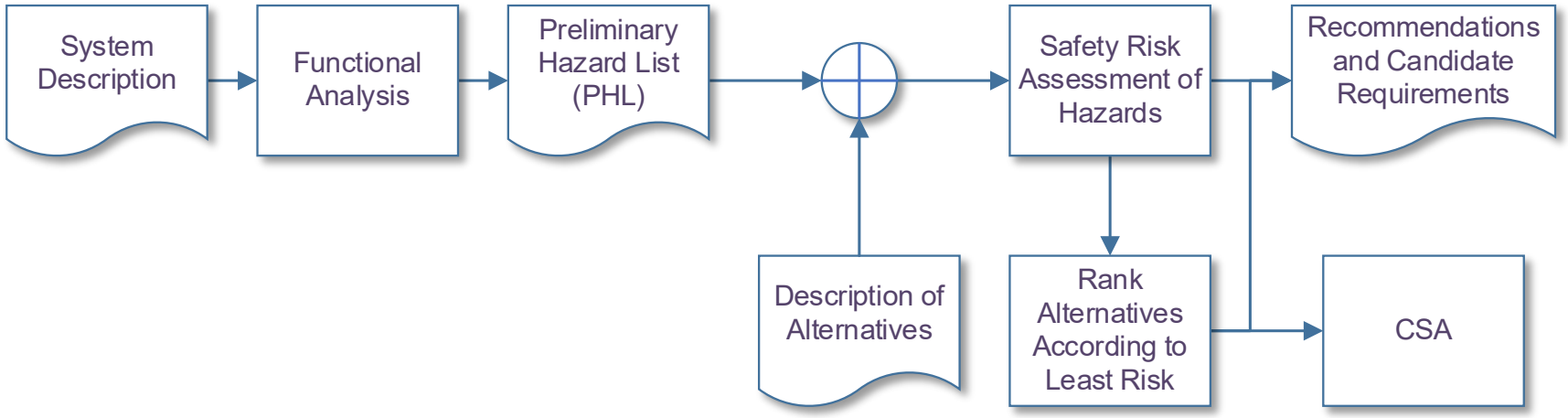
The CSA is a risk assessment, in that it defines both severity and likelihood in terms of the risk associated with each alternative under consideration. The basic tasks involved in the development of the CSA are depicted by Example I-3.

The first step within the CSA process involves describing the system under study in terms of the 5M model. Since most decisions are selected from alternatives, each alternative must be described in sufficient detail to ensure the audience can understand the hazards and risks evaluated. Often, one of the alternatives will be "no change" or retaining the baseline system.

A preliminary hazard list is developed and then each hazard's risk is assessed in the context of the alternative. Example I-4 provides a simple format for documenting alternatives to be considered by the CSA. The second step is to complete the CSA worksheet Example I-5 where hazards are identified, and risks assessed for each alternative.

The format of the worksheets allows for easy comparison of the impact of individual hazards for multiple alternatives. For example, a hazard may create a serious risk for one alternative where the same hazard might be rendered as negligible for another alternative. After this is done, requirements and recommendations can be made based on the data in the CSA. A CSA allows the decision maker to clearly distinguish the relative safety merit of each alternative.

CSA Process Flow (Example I-3)



COMPARATIVE SAFETY ASSESSMENT (CSA) WORKSHEET (EXAMPLE I-4)

Comparative Safety Assessment

SMS ID: **Airport:**

Locid: **City:**

Project Manager:

Description:

1 Hazard ID	2 Hazard Description	3 Causes	4 System States	5 Effects	6 Severity	7 Severity Rationale	8 Existing Controls	9 Alt1	10 Alt2	11 Alt3	12 Alt4
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											

SAMPLE COMPARATIVE SAFETY ASSESSMENT (CSA) HAZARD DESCRIPTION WORKSHEET (EXAMPLE I-5)

Hazard ID (1)	Hazard Description (2)	Causes (3)	System States (4)	Effects (5)	Severity/ Rationale (6)	Existing Controls (7)	Site 1A	Site 7	Site 9
1	Potential interference with navigation equipment (both planned and existing equipment) Interference with NAS equipment generates hazardously misleading information, followed by loss of situational awareness, leading to loss of separation between two moving aircraft/vehicles	Structural E3 interference from new tower location Line of Sight	During IFR / operations	Interference with NAS equipment generates hazardously misleading information, followed by loss of situational awareness Loss of separation	Sites 1A, 7, and 9 5 – No Safety Effect Based on the operational expertise of the NAS watch specialist	• FAA Order 6480.4-5a (5), The Airport Traffic Control Siting Process • Radar environment • FAA Order JO 7400.2, Procedures for Handling Airspace Matters • ATCT will use 7110.65 procedures for validating and/or verifying aircraft ID, position, and altitude • CFR 91.63, 91.75, 91.85, 97 • Other NAVAIDs (e.g., GPS)	5E Extremely improbable since the NAS Watch screening tool revealed no navigation interference issues at this site (Verified by NAS watch study) **(Low Risk Hazard)**	5E Extremely improbable since the NAS Watch screening tool revealed no navigation interference issues at this site (Verified by NAS watch study) **(Low Risk Hazard)**	5E Extremely improbable since the NAS Watch screening tool revealed no navigation interference issues at this site (Verified by NAS watch study) **(Low Risk Hazard)**
2	Potential interference with communication equipment (both planned and existing equipment)	Structural E3 interference from new tower location	During both Visual Flight Rules (VMC) and Instrument Meteorological Conditions (IMC) operations, including departures and approaches, up to and including CAT II, and surface procedures	Interference with NAS equipment generates loss of communication	Site 1A 3 - Major Since there is potential communication interference of the Radio Communications Outlet/ Remote Transmitter Receiver (RCO/RTR) Sites 7 & 9 5 – No Safety Effect • Since there is no potential impact to communication systems for Sites 7 and 9 • Based on operational expertise	• FAA Order 6480.4-5a (5), The Airport Traffic Control Siting Process • Radar environment • ATCT will use 7110.65 procedures for validating and/or verifying aircraft ID, position, and altitude. • CFR 91.63, 91.75, 91.85, 97 • FAA Order JO 7400.2, Procedures for Handling Airspace Matters	3C Remote since there is a potential impact to the RCO/RTR (Verified by NAS watch study) **(Medium Risk Hazard)**	5E Extremely improbable since the NAS Watch screening tool revealed no communication interference issues (Verified by NAS watch study) **(Low Risk Hazard)**	5E Extremely improbable since the NAS Watch screening tool revealed no communication interference issues at this site (Verified by NAS watch study) **(Low Risk Hazard)**

Operational Safety Assessment

Purpose

The Operational Safety Assessment (OSA) Example I-6 provides an assessment of hazards and safety requirements for various functional components of a system. For example, a partial list of functional components for an airport might include taxi-out operations, taxi-in operations, routine airfield maintenance, non-movement area push back and taxi procedures, etc. For each component, the SRM panel identifies and analyzes hazards to assign severity and pinpoint safety measures that can reduce probability of occurrence. The outcome is a determination of system safety requirements early in the planning process.

Method

The OSA is a two-step process. The first step identifies system physical and functional characteristics as well as air traffic and airport operational procedures. These include a description of both the ground and air elements of the system (airport). The second step is to perform an operational hazard assessment for each component identified in Step 1. Each component includes a set of hazards, risks and mitigations (or safety requirements), if needed. [2]

[2] The OSA as presented here is an adaptation of the OSA defined by the FAA System Safety Handbook.

OPERATIONAL SAFETY ASSESSMENT WORKSHEET (EXAMPLE I-6)

Operational Safety Assessment

SMS ID:

Locid: **Airport:**

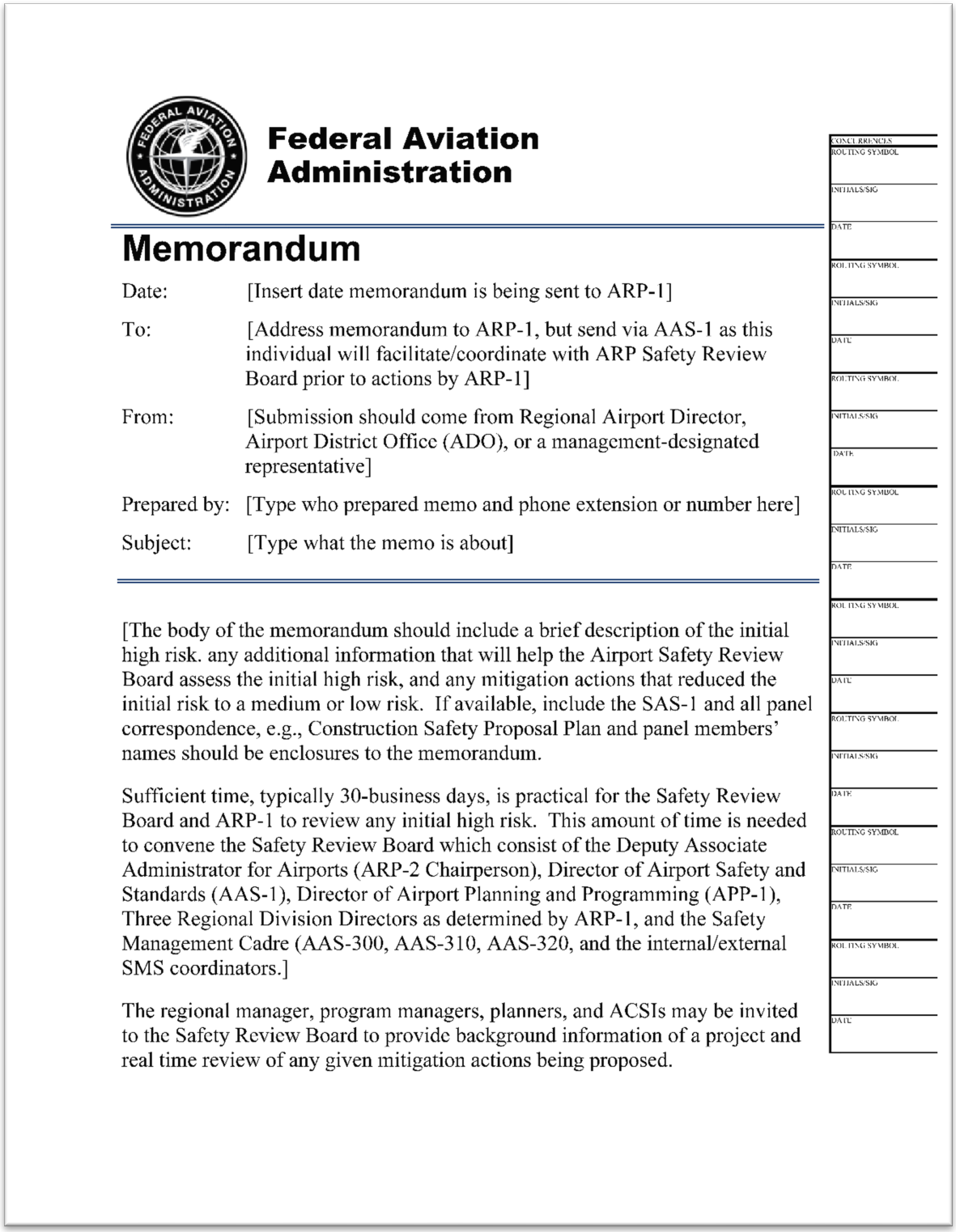
Project Manager: **City:**

Description:

1 Hazard ID	2 System Function	3 Operational Hazard	4 Operating Phase - System State	5 Effect of Operational Hazard	6 Operational Hazard Severity	7 Severity Rationale	8 Recommended Requirements
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

Page Intentionally Blank

Appendix J. Initial High Risk Escalation Memorandum Example



Federal Aviation Administration

Memorandum

Date: [Insert date memorandum is being sent to ARP-1]

To: [Address memorandum to ARP-1, but send via AAS-1 as this individual will facilitate/coordinate with ARP Safety Review Board prior to actions by ARP-1]

From: [Submission should come from Regional Airport Director, Airport District Office (ADO), or a management-designated representative]

Prepared by: [Type who prepared memo and phone extension or number here]

Subject: [Type what the memo is about]

[The body of the memorandum should include a brief description of the initial high risk. any additional information that will help the Airport Safety Review Board assess the initial high risk, and any mitigation actions that reduced the initial risk to a medium or low risk. If available, include the SAS-1 and all panel correspondence, e.g., Construction Safety Proposal Plan and panel members' names should be enclosures to the memorandum.

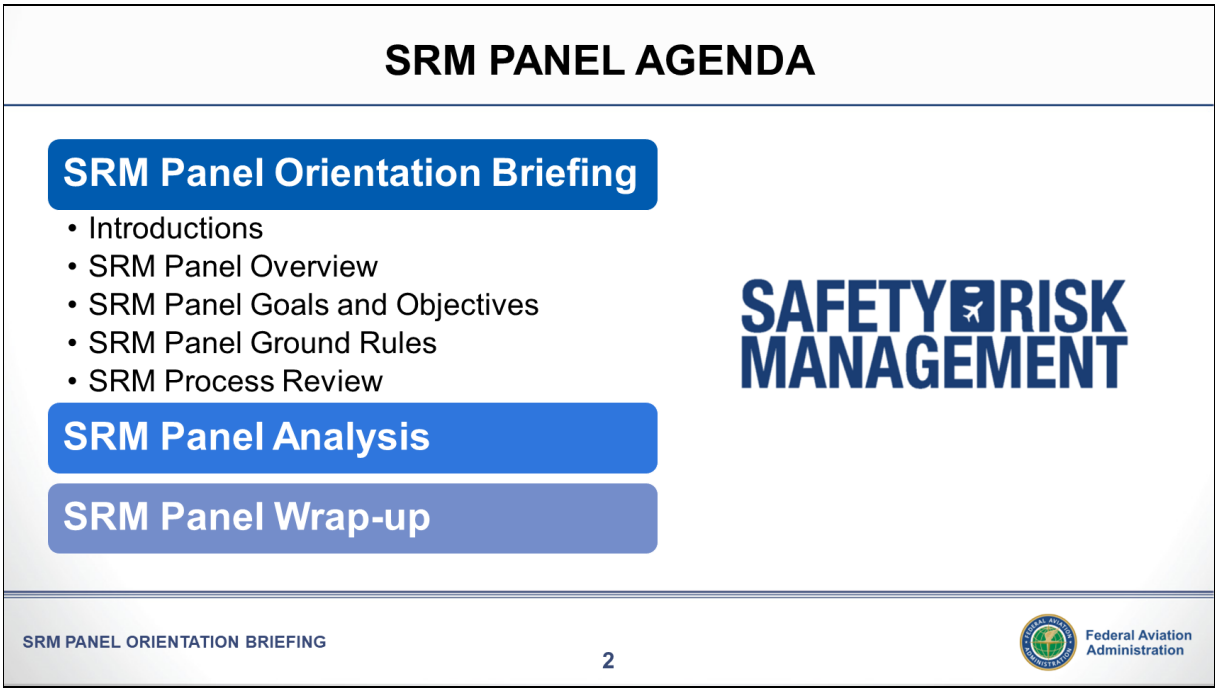
Sufficient time, typically 30-business days, is practical for the Safety Review Board and ARP-1 to review any initial high risk. This amount of time is needed to convene the Safety Review Board which consist of the Deputy Associate Administrator for Airports (ARP-2 Chairperson), Director of Airport Safety and Standards (AAS-1), Director of Airport Planning and Programming (APP-1), Three Regional Division Directors as determined by ARP-1, and the Safety Management Cadre (AAS-300, AAS-310, AAS-320, and the internal/external SMS coordinators.]

The regional manager, program managers, planners, and ACSIs may be invited to the Safety Review Board to provide background information of a project and real time review of any given mitigation actions being proposed.

CONCURRENCES
ROUTING SYMBOL
INITIALS/SIG
DATE
ROUTING SYMBOL
INITIALS/SIG
DATE
ROUTING SYMBOL
INITIALS/SIG
DATE
ROUTING SYMBOL
INITIALS/SIG
DATE
ROUTING SYMBOL
INITIALS/SIG
DATE
ROUTING SYMBOL
INITIALS/SIG
DATE
ROUTING SYMBOL
INITIALS/SIG
DATE
ROUTING SYMBOL
INITIALS/SIG
DATE

Page Intentionally Blank

Appendix K. SRM Panel Orientation Briefing

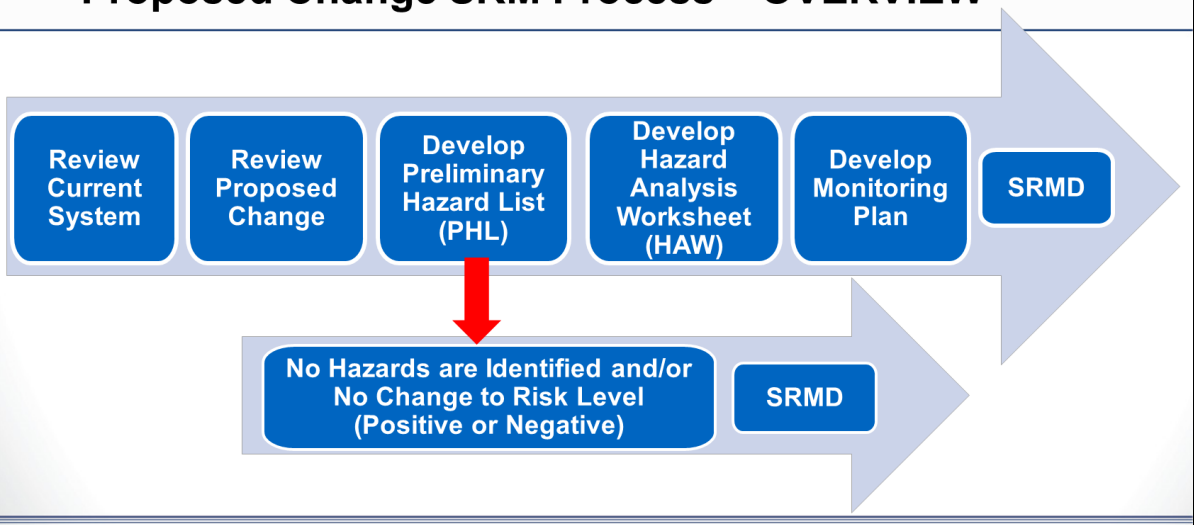


INTRODUCTIONS

- What is your name?
- What is your background?
- What is your subject area expertise?
- Have you participated on an SRM panel before?

SRM PANEL ORIENTATION BRIEFING 3 Federal Aviation Administration

Proposed Change SRM Process – OVERVIEW



SRM PANEL ORIENTATION BRIEFING 4 Federal Aviation Administration

SRM PANEL GOALS AND OBJECTIVES

- Provide the panel with a draft of the “Current System”, “Change Proposal”, Project Proposal Summary”, Construction Safety Phasing Plan, etc.
- Describe the assessment method the panel will use to identify hazards (Ex. Preliminary Hazard Assessment, Hazard Analysis Worksheet, etc.)
- **REMEMBER: The SRM panel is convened to conduct a safety analysis of the proposed airport change, modification, or addition; not the validity of the change.**

SRM PANEL ORIENTATION BRIEFING 5 Federal Aviation Administration

SRM PANEL GROUND RULES

- **The SRM panel will start and end on time**
  - Breaks should occur periodically
- **No electronic communications**
  - If necessary, please step out of the room
- **No disruptive sidebar conversations**
- **Facilitator role**
  - Moderates the deliberation of the SRM panel
  - Limit their influence but act as a guide on the safety analysis
  - Ensures compliance with the SRM process
- **SRM panels are a consensus driven process – each SRM panel member’s input will be heard and considered**

SRM PANEL ORIENTATION BRIEFING 6 Federal Aviation Administration

SRM PROCESS REVIEW

SRM PROCESS

Mitigate or Treat Risk

- Identify mitigation strategies
- Develop safety performance targets
- Develop monitoring plan

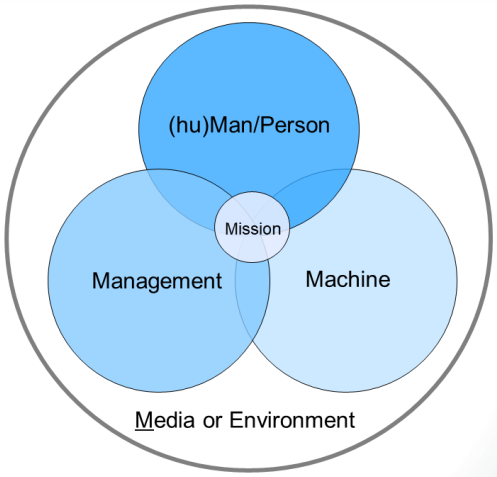
DESCRIBE THE SYSTEM

SRM PANEL ORIENTATION BRIEFING 9 Federal Aviation Administration

5M MODEL

The 5M Model is a tool used to describe the system, operation, or procedures being added or changed. It includes:

- **MISSION:** The clearly-defined and detailed purpose of the NAS change or system/operation being assessed
- **(hu)MAN/PERSON:** Operators, maintainers, and affected stakeholders
- **MACHINE:** Equipment used in the system
- **MANAGEMENT:** Procedures and policies that govern the system's behavior
- **MEDIA/ENVIRONMENT:** The environment in which the system is operated and maintained



SRM PANEL ORIENTATION BRIEFING 10 Federal Aviation Administration

Identify Hazards

SRM PANEL ORIENTATION BRIEFING 11 Federal Aviation Administration

SRM DEFINITIONS

HAZARD

Any real or potential condition that can cause 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 prerequisite to an accident or incident.

SRM PANEL ORIENTATION BRIEFING 12 Federal Aviation Administration

SRM DEFINITIONS

CAUSE
The origin of a hazard.

SRM PANEL ORIENTATION BRIEFING 13 Federal Aviation Administration

SRM DEFINITIONS

SYSTEM STATE
An expression of the various conditions, characterized by quantities or qualities, in which a system can exist.

SRM PANEL ORIENTATION BRIEFING 14 Federal Aviation Administration

SRM DEFINITIONS

EFFECT

The real or credible harmful outcomes that have occurred or can be expected if the hazard occurs in the defined system state.

SRM PANEL ORIENTATION BRIEFING 15 Federal Aviation Administration

SRM DEFINITIONS

WORST CREDIBLE EFFECT

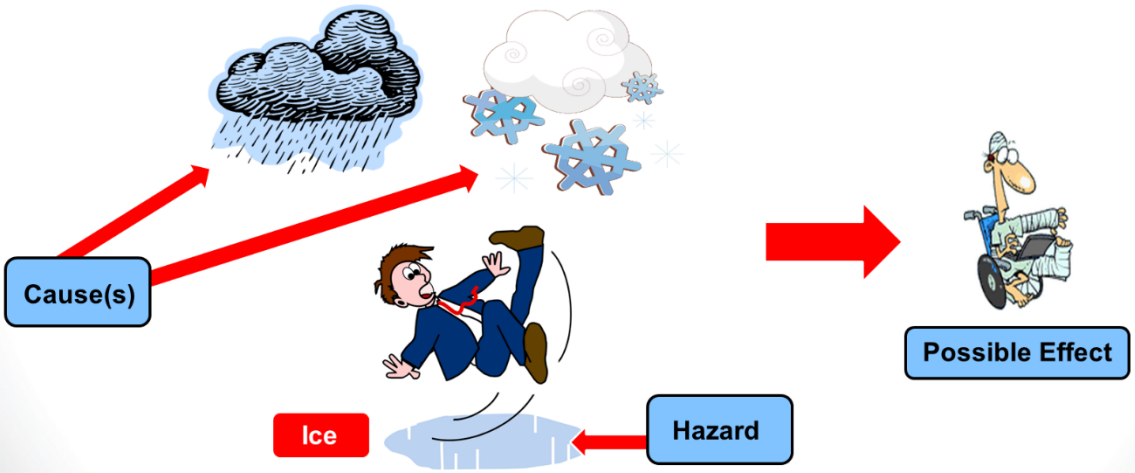
The most unfavorable, yet believable and possible, condition given the system state.

Worst: Most unfavorable effects expected.

Credible: It is reasonable to expect that the assumed combination of conditions that define the system state will occur within the operational lifetime of a typical ATC system.

SRM PANEL ORIENTATION BRIEFING 16 Federal Aviation Administration

RELATIONSHIP BETWEEN CAUSE, HAZARD AND EFFECT



SRM PANEL ORIENTATION BRIEFING 17 Federal Aviation Administration

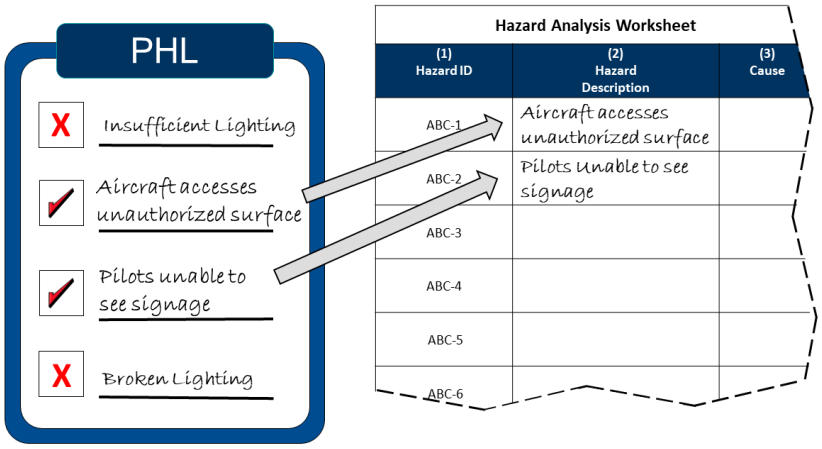
PRELIMINARY HAZARD LIST (PHL)

- Hazard identification tool that lists potential hazards
- The result of brainstorming (may include hazards, causes, effects, and sometimes system state or existing controls)
- Used to list all possible hazards within scope
- Stepping stone to Hazard Analysis Worksheet (HAW)

Ultimately, the list will be a combination of hazards, causes, and effects that will be later categorized in the SRM process. Within/out of scope is not addressed at this time.

SRM PANEL ORIENTATION BRIEFING 18 Federal Aviation Administration

DEVELOPING A PHL INTO A PHA WORKSHEET



SRM PANEL ORIENTATION BRIEFING 19 Federal Aviation Administration

HAW: COLUMNS 1-4

(1) Hazard ID	(2) Hazard Description	(3) Causes	(4) System State
Alpha-numeric Identifier.	Any real or potential condition that can cause 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 prerequisite to an accident or incident.	The origin of a hazard.	An expression of the various conditions, characterized by quantities or qualities, in which a system can exist.

SRM PANEL ORIENTATION BRIEFING 20 Federal Aviation Administration

HAW: COLUMNS 5-11

(5) Existing Control(s)	(6) Existing Control Justification / Supporting Data	(7) Effects (Credible Effects)	(8) Severity *	(9) Severity Rationale	(10) Likelihood *	(11) Likelihood Rationale
Mitigation already in place that prevents or reduces the hazard's likelihood or mitigates its effects. A control is only considered existing if it has been validated and verified with objective evidence.	Explanation of how existing controls were validated and verified.	Real or credible harmful outcomes that have occurred or can be expected if the hazard occurs in the defined system state.	Consequence or impact of a hazard's effect or outcome in terms of degree of loss or harm.	Explanation of how the severity was determined.	Estimated probability or frequency, in quantitative or qualitative terms, of a hazard's effect or outcome.	Explanation of how the likelihood was determined.

* Refer to Quick Reference Guide for Severity and Likelihood tables.

SRM PANEL ORIENTATION BRIEFING 21 Federal Aviation Administration

HAW: COLUMNS 12-15

(12) Initial Risk	(13) Safety Requirements (Mitigations)	(14) Organization Responsible for Implementing Safety Requirements	(15) Predicted Residual Risk
The composite of the severity and likelihood of a hazard, considering only existing controls and documented assumptions for a given system state. It describes the risk before any of the proposed mitigations are implemented.	Controls that have the potential to mitigate a cause of a hazard or the hazard's associated risk, but have not been verified.	The organization's name and point of contact name and number.	The estimated risk level once the proposed safety requirements are implemented.

SRM PANEL ORIENTATION BRIEFING 22 Federal Aviation Administration

HAW ICE EXAMPLE: IDENTIFY HAZARDS

(1) Hazard ID	(2) Hazard Description	(3) Causes	(4) System State
ABC-2014-1	Ice accumulation on the sidewalk (slipping hazard)	Freezing rain Snow	November-March Temperatures below 32 ° F

SRM PANEL ORIENTATION BRIEFING 23 Federal Aviation Administration

Analyze Risk

SRM PANEL ORIENTATION BRIEFING 24 Federal Aviation Administration

HAW ICE EXAMPLE: ANALYZE RISK

HAZARD: ABC-2014-1

(5) Existing Control (s)	(6) Existing Control Justification / Supporting Data	(7) Effects	(8) Severity	(9) Severity Rationale	(10) Likelihood	(11) Likelihood Rationale
Current building safety/security plan	BLD PLN 001	Sprained Wrist	Major (3)	Slipping on ice can cause joint injuries, bodily harm, muscle strains	Probable (B)	10,000 people use the sidewalks, and approximately 5 injuries occur due to slips on ice, giving a rate of $5x10^{-4}$ per operation (one per 2000).
ABC regulations	ABC Reg 002					
Intervention by facility personnel	Facilitate personnel intervention by placing warning signs and spreading salt/ice melting agents.	Head injury	Hazardous (2)	Slipping on ice can cause accidental head injury.	Extremely Improbable (E_1)	Over the past 10 years 36 head injuries have been reported. Estimate that a typical person makes about 100 trips per winter on foot. Total population of US is about 300 million, so rate is 36 / (10*100*3x108) = 1.2x10-11 per operation."

Assess Risk

HAW ICE EXAMPLE: ASSESS RISK

(7) Effects	(8) Severity	(10) Likelihood	(12) Initial risk	Initial Hazard Risk
Sprained Wrist	Major (3)	Probable (B)	3B - High	3B - High
Head injury	Hazardous (2)	Extremely Improbable (E)	2E - Medium	

SRM PANEL ORIENTATION BRIEFING

27

Federal Aviation Administration

HAW ICE EXAMPLE: INITIAL RISK

Severity / Likelihood	Minimal 5	Minor 4	Major 3	Hazardous 2	Catastrophic 1
Frequent A	Low	Medium	High	High	High
Probable B	Low	Medium	ABC 2014-1	High	High
Remote C	Low	Medium	Medium	High	High
Extremely Remote D	Low	Low	Medium	Medium	High
Extremely Improbable E	Low	Low	Low	Medium	High* / Medium

HAZARD: ABC-2014-1

*Risk is high when there is a single-point or common cause failure.

SRM PANEL ORIENTATION BRIEFING

28

Federal Aviation Administration

Mitigate or Treat Risk

SRM PANEL ORIENTATION BRIEFING 29 Federal Aviation Administration

HAW ICE EXAMPLE: MITIGATE OR TREAT RISK

(13) Safety Requirements	(14) Organization Responsible for Implementing Safety Requirements	(15) Predicted Residual Risk
Establish sand buckets at each end of the sidewalk. Facility custodian will sand the sidewalk each hour when the hazard is present.	Jeene Smith, ABC Custodian Joe Smith, ABC Manager	3C Medium
Post facility-wide warning of icing conditions.		
Each employee will receive a briefing on the alternate route to follow if the hazard is present.		
Facility management will budget the cost of sidewalk anti-icing materials.	Jane Smith, Director	

HAZARD: ABC-2014-1

SRM PANEL ORIENTATION BRIEFING 30 Federal Aviation Administration

HAW ICE EXAMPLE: PREDICTED RESIDUAL RISK

Severity / Likelihood	Minimal 5	Minor 4	Major 3	Hazardous 2	Catastrophic 1
Frequent A	Low	Medium	High	High	High
Probable B	Low	Medium	High	High	High
Remote C	Low	Medium	ABC 2014-1	High	High
Extremely Remote D	Low	Low	Medium	Medium	High
Extremely Improbable E	Low	Low	Low	Medium	High* / Medium

*Risk is high when there is a single-point or common cause failure.

SRM PANEL ORIENTATION BRIEFING 31 Federal Aviation Administration

DEVELOP THE HAW MONITORING PLAN

- Documents all hazards
- Documents a plan to implement safety requirements for all risk levels identified in the final HAW
- Record monitoring activities
  - Who is responsible?
  - How will the change be monitored and how often?
  - How will the hazards be tracked?
  - What will the hazard be measured against?
  - How will progress be measured?

Document and Verify Low-Risk Hazards at Least Once

SRM PANEL ORIENTATION BRIEFING 32 Federal Aviation Administration

MONITORING PLAN TEMPLATE

Transcribe column information as identified in the HAW

Hazard ID	Hazard Description	Initial Risk	Safety Requirements (Mitigations)	Responsible Organization for Implementing Safety Requirements	Monitoring Activities	Frequency	Duration
					Description of how the hazard and associated risk will be monitored	Tracking frequency for conducting the activities	How long the monitoring activities will be actively tracked for this hazard and the associated risk

SRM PANEL ORIENTATION BRIEFING 33 Federal Aviation Administration

QUESTIONS?

SRM PANEL ORIENTATION BRIEFING 34 Federal Aviation Administration