Federal Aviation Administration

Office of Airports

FAA Office of Airports Safety Management System (SMS)

Desk Reference

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1 PURPOSE AND SCOPE

On August 2010, the FAA's Office of Airports issued FAA Order 5200.11, FAA Airports (ARP) Safety Management System, to implement ARP's requirements for a Safety Management System (SMS). This desk reference supplements FAA Order 5200.11 by clarifying the requirements and processes of the ARP 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. An electronic copy of the Order and desk reference is available online at www.faa.gov.

Use this guidance when developing, revising and approving ARP standards and safety actions (including advisory circulars), airport layout plans, construction safety and phasing plans, modifications of standards and other ARP actions that may impact the National Airspace System. 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 this guidance for the approval and enforcement of Airport Certification Manuals under 14 CFR Part 139, Certification of Airports (Part 139). SMS requirements related to Part 139 are the subject of a separate proposed rulemaking action. At the conclusion of this rulemaking, ARP will provide further guidance on SMS for operators of airports certificated under Part 139.

This guidance does not change the operational responsibilities of FAA personnel or airport sponsors to comply with applicable statutory and regulatory requirements, including related advisory circulars (ACs), in accordance with existing Airport Improvement Program (AIP) and Passenger Facility Charge (PFC) program assurances. Nor does ARP's implementation of SMS change an airport sponsor's responsibility to maintain and operate its airport in a safe manner.

In developing this guidance, we have made every effort to ensure it reflects current FAA and industry practices and is consistent with FAA Order 5200.11. We developed Order 5200.11 with the intent of developing a follow-on SMS desk reference to provide detailed guidance and interpretation of the Order for ARP employees. Therefore, this ARP SMS Desk Reference document constitutes revision and update to the Order (similar to Program Guidance Letters that update Order 5100.38, AIP Handbook). Should guidance contained in this document conflict with Order 5200.11, the Order takes precedence. ARP will periodically revise the Desk Reference to ensure consistency with Order 5200.11 and agency requirements. Clarifications, if needed, should be referred to the Director of the Office of Airport Safety and Standards, AAS-1.

This guidance document is organized as follows:

a. Sections 1 through 3 contain general guidance on SMS.

b. Section 4 contains information on FAA, airport and state roles and responsibilities when implementing SMS.

c. Section 5 contains information on ARP-specific implementation of Safety Risk Management (SRM).

d. Section 6 contains information on SRM required for specific ARP approval actions.

e. Section 7 addresses funding considerations for ARP SRM activities.

f. Section 8 describes the ARP SRM Tracking System (SRMTS).

g. Sections 9 and 10 describe ARP SMS Safety Assurance and Safety Promotion.

h. Appendices A through I contain a Glossary, sample documents and supplemental guidance.

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 National Airspace System (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 Guidance, contains requirements for establishing a common safety management system within the agency. FAA Order 5200.11 establishes the ARP SMS in accordance with Order 8000.369.

The goal of the ARP 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 will need the involvement and 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. Following the FAA policy of creating and maintaining a just safety culture, the ARP SMS will encourage identification of hazards and safety concerns from any source without fear of discipline 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

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.

Order 5200.11, Chapter 3, Safety Policy, explains more about Safety Policy.

2.2 Safety Risk Management (SRM)

Safety Risk Management (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 many project approvals and other airport development services.

Section 5, Safety Risk Management and the Safety Assessment Process, of this document provides 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. Section 9, Safety Assurance, below provides further guidance on the ARP Safety Assurance process.

2.4 Safety Promotion

The final component of SMS is Safety Promotion. Through a combination of training, improved communication and confidential reporting systems, ARP will promote a positive safety culture and strive to create an environment where safety objectives can be achieved. ARP will use various internal and external methods to communicate safety goals and promote safety, including print publications, the FAA website and multimedia training presentations. Chapter

6, Safety Promotion, of Order 5200.11 provides more details on ARP's goal to promote a positive and proactive safety culture.

3 TRANSITION TO SMS

FAA Order 5200.11, FAA Airports (ARP) Safety Management System, calls for phasing-in SRM requirements depending on the type of airport. Originally, the first phase of SRM was to begin June 1, 2011, and apply to all large, medium and small hub airports. Change 1 to Order 5200.11 changed the phase-in of SRM to apply only to large hub airports as of June 1, 2011, with other airports to be added later as resources become available. Paragraph 1-4, Effective Date, of the Order states that SRM requirements apply to "projects, approvals and standards started ***after*** June 1, 2011" (emphasis added).

3.1 Projects Started Before June 1, 2011

Projects, approvals and standards started before June 1, 2011, are not required to meet the ARP SRM requirements. The following includes typical examples of projects, approvals and standards that may be considered "started before June 1, 2011."

a. Any FAA airspace actions (Forms 7480-1 and 7460-1 associated with SRM-triggering actions) that the FAA receives by or before June 1, 2011, or any of the following, whichever occurs first:

    i. Airport development projects (including engineering design) for which the airport sponsor has completed consultant selection and scope of work, executed a contract and issued a notice to proceed.

    ii. Airport planning studies and airport layout plan (ALP) updates for which the sponsor has completed consultant selection and scope of work, executed a contract and issued a notice to proceed.

    iii. Modifications of airport design standards that are submitted for FAA review and coordination before June 1, 2011.

    iv. Part 150 noise compatibility program-related proposed airport changes that are submitted for FAA review before June 1, 2011.

    v. FAA advisory circular updates for which contracts are approved before June 1, 2011.

    vi. Other projects, studies and airport changes that require FAA approval where construction started or where the studies' scope of work is finalized before June 1, 2011.

b. Although the Order does not require SRM for projects started before June 1, 2011, they may benefit from applying SRM requirements. Such benefits include addressing other FAA LOB project comments or objections, becoming familiar with future SRM requirements and enhancing airport safety by identifying potential safety hazards. Uniquely complex or safety-critical projects that are underway before June 1, 2011, are encouraged to follow this SRM guidance in order to identify safety risks and mitigations that are likely to affect the eventual utility of the project. ARP Regions and Airport District Offices (ADOs) should use their judgment and, where practicable, encourage airport sponsors to follow the SRM guidance for these projects in advance of the required date.

c. Projects at large hub airports starting after June 1, 2011, must be screened using the appropriate SMS form to determine the required level of SRM documentation required. The ARP SMS transition only applies to projects that are started before June 1, 2011, and not future years.

3.2 ATO SRM Transition

Nothing in Order 5200.11 changes ATO requirements for performing SRM for changes to the NAS (i.e. airport construction projects). Therefore, projects that are not required to undergo ARP SRM according to Order 5200.11 may require SRM under ATO guidelines. Although the panel for such changes should be led by ATO, ARP project managers should coordinate with ATO about the best way to handle projects so that ATO and ARP requirements are met.

4 ROLES AND RESPONSIBILITIES

4.1 ARP Safety Management Division

FAA Order 5200.11 requires the establishment of a Safety Management Division under the Office of Airport Safety and Standards (AAS). Until a new division is established, direct all questions to AAS-1.

4.2 Airports Organization (ARP)

FAA Order 8000.369 requires the FAA Office of Airports (ARP) to implement SMS. Order 5200.11 outlines how ARP will implement the four components of SMS (Safety Policy, Safety Risk Management, Safety Assurance and Safety Promotion) in its day-to-day operations. Implementing SMS will allow ARP to improve existing safety practices and create new procedures 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.

4.3 Airport Sponsors

ARP SMS requires close coordination with and assistance from airport sponsors. Airport sponsors must consider the resources necessary to implement 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 SRM review and required FAA approvals are not delayed.

Nothing in the ARP SRM process changes the airport sponsors' responsibility for safe management and operation of their airports. 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 (see 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 will be expected to participate in panel meeting. 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 (see Section 5).

4.3.1 Sponsor Actions Requiring an SRM Safety Assessment

Order 5200.11, Paragraph 1-4a, lists triggering actions that require an SRM Safety Assessment before the FAA can issue approvals or determinations. Typical actions include ALP approvals, construction project review, modifications of standards and other airfield changes. However, the list is not all-encompassing. If ARP personnel identify other sponsor actions that could introduce risk into the airport or aviation system, they should bring them to the attention of the ARP Office of Safety and Standards, AAS-1.

Section 6 provides further guidance on SRM for each specific triggering action.

4.3.2 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 will include 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 10.1 for available training courses.

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

c. 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.

d. 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.

e. Pay the costs (if any) associated with developing documentation the FAA needs to approve a final SRM document, which may be AIP/PFC eligible (see Section 7).

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

g. Participate in SRM panels as subject matter experts (SMEs).

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

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

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

4.4 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 a subject matter expert (SME) on SRM panels. States can 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) for further guidance if a state, territory or IA requests assistance with establishing an SMS for its aviation system.

4.5 Block Grant States

ARP SMS does not require work delegated to AIP block grant states to be passed back to the FAA merely because of the requirement to perform SRM. The requirements of FAA personnel for SRM apply equally to the block grant states where the state already has responsibilities to approve and/or review airport projects. The determining factor will usually be the block grant Memorandum of Agreement (MOA) that establishes specific responsibilities and procedures under the block grant. For example, if the MOA requires the state to review and approve the ALP for the FAA, the state would also perform the SRM requirement (part of the ALP review). States with these responsibilities are expected to prepare their workforce to follow the ARP SRM procedures or other equivalent processes if the state has its own aviation SMS. See Paragraph 4.4.

The MOA for some states may need to be updated to clarify block grant responsibilities for SRM as described above. It is strongly recommended that all ADOs with State Block Grant responsibilities consult with their states to ensure the SMS requirements are fully understood. Additionally, even where the state acknowledges its requirements, ADOs should consider amending the MOA to memorialize this agreement.

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

a. Follow Order 5200.11 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 Order 5200.11. States with projects that have high initial risk SRM Safety Assessments will forward the SRM Safety Assessments to the appropriate ADO/Regional Office for coordination with the Safety Review Board for review and ARP-1 for approval.

c. Participate in FAA SMS and SRM training. The FAA will provide classroom and online training at no cost 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.

e. Use the ARP SRM Tracking System (SRMTS) to record proposals and SRM findings (see Section 8).

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.

4.6 Other FAA LOBs

While Order 5200.11 applies to internal ARP roles and responsibilities, it also integrates the SMS participation required by ATO and AVS. ATO, AVS 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. In any case, participation by ATO and AVS in SRM panels will be done at their cost. 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 and AVS SRM processes and panels. Contact the Office of Airport Safety and Standards, AAS-1, should conflicts arise about participation, leadership or duplication of effort for any SRM effort.

5 SAFETY RISK MANAGEMENT AND THE SAFETY ASSESSMENT PROCESS

Safety Risk Management (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 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 documenting the SRM panel's findings (if the SAS form indicates a panel is appropriate). A completed Safety Assessment documents completion of SRM in accordance with FAA Order 5200.11. The Safety Assessment Screening (SAS) forms (Order 5200.11, Appendix D) serve two purposes: they help determine the appropriate level of assessment and document the five steps of the SRM process and SRM panel findings.

5.1 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 6 for specific guidance for developing SRM Safety Assessments for each triggering action. Such actions include the following (see Order 5200.11, Paragraph 1-4a):

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

b. FAA review of new or revised airport layout plans (ALPs).

c. Construction project coordination, review or approval for federally obligated airports, including construction safety and phasing plans. Note that any construction on a federally obligated airport, including privately funded development, can trigger an SRM Safety Assessment.

d. Approval of Part 150 noise compatibility program measures that could affect aviation safety (such as noise abatement departure procedures).

e. Approval of requests for project-specific modifications of standards (excludes AC 150/5370-10, Standards for Specifying Construction of Airports).

f. 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.

g. Modification or update that substantially changes an action that has already been through an SRM review or Safety Assessment (see Paragraph 5.10 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.

Refer questions about whether an approval, determination or standard requires a Safety Assessment to the regional SMS coordinator or the Office of Airport Safety and Standards, AAS-1.

5.2 Airport Project Approvals Not Typically Requiring SRM Safety Assessments

Appendix B of Order 5200.11 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.

Refer questions about ARP approvals requiring SRM Safety Assessment to the regional SMS coordinator or the Office of Airport Safety and Standards, AAS-1.

5.3 Safety Assessment 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 and are explained in more depth in the following sections:

a. Initiate the SAS form and log into the SRM Tracking System (SRMTS). This step initiates the process for tracking purposes. Appendix E includes a sample of the SAS-1 form for airport planning and construction projects. Refer to Section 8 for more information on the SRMTS and the interim tracking system on the FAA ARP shared computer drive.

b. Prepare a Proposal Summary that documents existing conditions and proposed changes to be considered by the Safety Assessment. Reviewers and SRM panels use the Proposal Summary to easily gain an understanding of the proposal. It is an important document that will assist a quality and timely outcome for the SRM. Appendix H provides a description and sample of a Proposal Summary.

c. Determine if an SRM panel is required. Review the proposal with other FAA offices and stakeholders for impact on aviation/airport safety and operations. The purpose is to determine the need for an SRM panel (Paragraph 5.6) as early as possible. In any case, preparations for the SRM panel should be started well enough in advances 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. The results are entered into the SRMTS.

d. Prepare for the SRM panel. Notify the airport sponsor of the need for a panel and a facilitator. Identify a facilitator (Paragraph 5.6.1), identify panel members (Paragraph 5.6.2) and assemble appropriate safety data, including simulation studies that may be valuable for the panel.

e. Conduct the SRM panel meeting. Employ standard SRM processes and tools as described by Paragraph 5.7.2. Ensure that final documentation (Paragraph 5.9) includes:

    i. Final project Proposal Summary

    ii. Panel deliberations and findings, including dissenting opinions

    iii. Completed hazard identification and analysis tools (PHA, CSA or OSA) (see Appendix I)

    iv. Completed SAS form, signed by meeting participants and ready for approval/acceptance signatures

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

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

ii. FAA ARP management approves the findings for the FAA.

Section 6 provides guidance for managing the Safety Assessment process for various types of projects and proposals.

5.4 ARP Project Managers and the SRM Safety Assessment

The ARP project manager is responsible for seeing the SRM Safety Assessment process through to completion. The project manager is the ARP project/program manager, engineer, planner or environmental specialist who is responsible for overseeing and administering the project or change action for the FAA. The project manager has multiple roles in the process:

a. Serves as subject matter expert on the SRM panel if needed and warranted.

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 leads the SRM panel. 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 is not 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 and summary of key discussion points and dissenting opinions.

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

ARP project managers should complete the SRM for Practitioners Course (FAA Course No. 06000006, see Section 10, Safety Promotion) before assuming SRM responsibilities.

5.5 Safety Assessment Screening (SAS)

The Safety Assessment Screening (SAS) is a set of forms that document the Safety Assessment process. The appropriate SAS form (see Appendix E 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. Order 5200.11 requires that the SAS be completed and signed before

completion of the FAA approval action that triggers the SRM. See Paragraph 5.1 for a description of SRM triggering actions. Figures 4-2, 4-3, and 4-4 in Order 5200.11 provide process flow charts for completing the SAS forms.

The project manager begins completing the SAS as soon as a project or SRM triggering action is identified. The objective is to decide as early as possible 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, if a preliminary review indicates a significant impact on aircraft operations, such as displaced thresholds, declared distances and taxiway entrance changes, then an SRM panel is most likely appropriate and work can begin immediately to arrange for and coordinate the meeting.

5.6 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.

The project manager should anticipate the need for an SRM panel and begin planning and scheduling as early as possible to ensure the panel does not delay the approval or determination associated with the triggering action. Although Order 5200.11 requires a panel 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 preparation for SRM panels, the project manager should work with the regional SMS coordinator to identify potential SRM panel members and arrange for their attendance at the meeting.

5.6.1 Panel Facilitators

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. They must be neutral with no bias toward the discussions and conclusions of the panel.

The FAA project manager has overall responsibility for the outcomes of the SRM process as well as 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 outcome is acceptable to

the FAA. The FAA project manager must also approve the sponsor's selection of the panel facilitator.

If the airport sponsor initiates a triggering action that requires FAA approval (approval of an ALP, modification of standards, approval of a construction safety and phasing plan, non-construction changes, etc.), the sponsor is expected to provide the panel facilitator. (See Section 7 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, ATO has trained facilitators in each Service Center that may be available to assist if supported by mission needs and availability. This may be appropriate for certain controversial projects where the sponsor or FAA (ARP project manager) believe that it would be difficult for the airport to obtain unbiased facilitation services. Coordinate with the regional SMS coordinator to determine if ATO resources are available to help with facilitation.

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

The panel facilitator does not make final decisions about the findings of the panel, particularly if the panel fails to reach a sound consensus that is supported by all panel members. The FAA project manager has the final say on the findings of the panel and may use voting or other means to reach a decision if a consensus is not possible. It is the responsibility of the dissenting party to provide reasons and justifications for the dissent for the SRM documentation. Dissenting opinions should be 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.

5.6.2 Panel Member Selection

Panel members must analyze and consider all relevant and available data to form a sound basis and rationale for their deliberations. Panel members are subject matter experts (SMEs) and should be selected because of their technical expertise or operational responsibilities for the facility or system under consideration. SMEs are 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.

ARP project managers (in consultation with the regional SMS coordinator) should identify those SMEs who will be objective, safety-minded and avoid promoting specific agendas. Each FAA office having involvement 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 SMEs 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 a pressing need to participate.

ARP project managers should consider the following groups and the guidance above when identifying potential SRM panel members. (Note: Not every panel will require a representative from each of the groups listed below.) The project manager is expected to use professional judgment in selecting the appropriate representatives.

a. Airport sponsor (possibly including representatives from airport operations, airport maintenance, aircraft rescue and fire fighting (ARFF) and airport planning)
b. Representatives of airport tenants directly affected by the proposed action
c. Airport Traffic Control Tower (ATCT) manager, ATO District Office, Air Route Traffic Control Center or Terminal Radar Approach Control for non-towered airports
d. FAA Flight Procedures Office
e. ATO-Technical Operations staff
f. ATO-Safety (i.e. Regional Runway Safety Office)
g. FAA Flight Standards District Office
h. Representative of the pilot community (general aviation, corporate or airlines)
i. FAA Airport District Office planner/project managers
j. FAA airport certification safety inspector for certificated airports
k. State aviation partners
l. Contractors or consultants involved in the project
m. Aircraft manufacturers and/or trade associations (for standards assessments)
n. Military

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

p. Transportation Security Administration (TSA) or other security offices

Appendix C includes the office designation and general telephone numbers for some of the FAA organizations listed above.

If possible, each selected panel member should provide a back-up member 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 the Office of Airport Safety and Standards (AAS-1) should be contacted if an FAA office fails to respond.

Per Order 5200.11, the project manager will work with the regional SMS coordinator and airport sponsor to determine participants. The FAA project manager will make initial contact with FAA panel members. The facilitator or airport sponsor will make 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.

5.6.3 Panel Observers

Observers to panel activities are strongly discouraged. 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, ARP will permit FAA and airport observers for training purposes only, but observers cannot provide direct input to panel discussions. Additionally, it is important to remind observers that only the documentation produced by the panel is "official"; no panel discussion should be considered in any way an official FAA or ARP stance on any issue. At any time, the panel facilitator or FAA project manager may revoke an observer's invitation to witness panel activities.

5.6.4 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 and logistics.

d. Review the airport sponsor's project proposal and ensure the facilitator distributes it to panel members at least 7 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 if there are 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.)

5.6.5 Panel Meeting Logistics

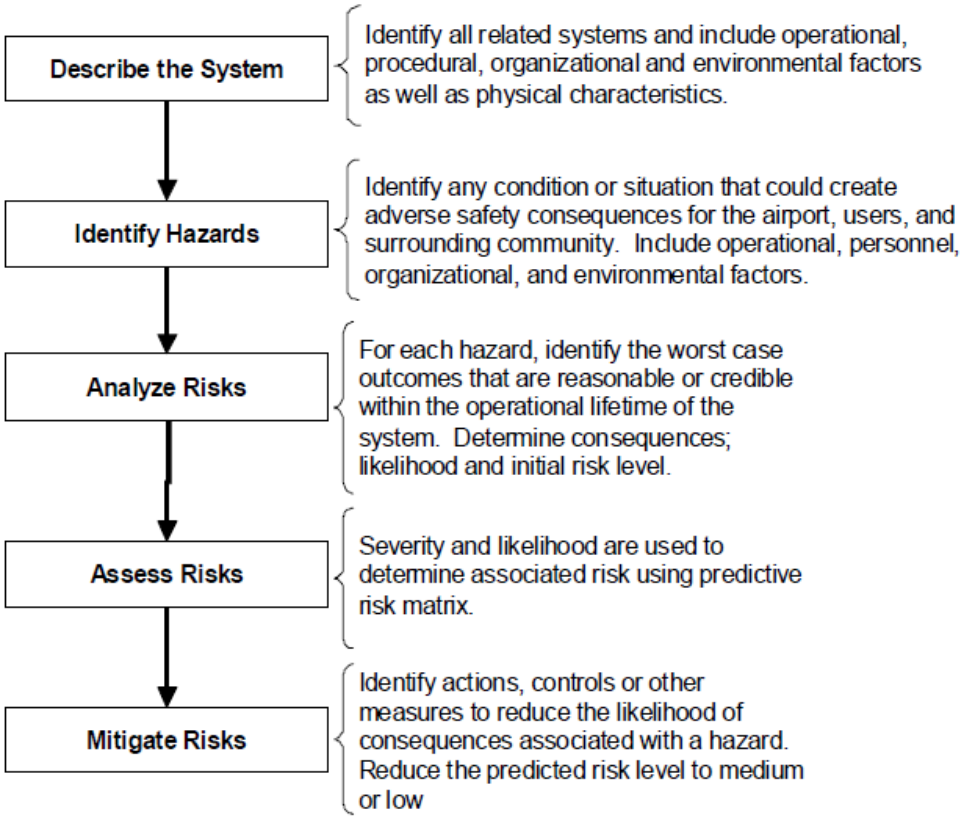
The panel meetings are usually held at the airport where the project is located. However, in some instances, SRM panel meetings for simple straight forward projects at less busy airports may be held remotely via teleconference or other web-based means. Panel meetings may also be held at FAA offices or off-site locations.

5.7 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 1.

FIGURE 1 – SRM SAFETY ASSESSMENT PROCESS

(Source – FAA Order 5200.11)



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 5.5, 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 steps of SRM and document those findings. Paragraph 5.9 explains the documentation requirements associated with the SRM analysis.

5.7.1 Step 1: Describe the Facility or System

The first step of SRM is to describe the facility or system under analysis. Order 5200.11 defines *system* as an integrated set of constituent pieces that are 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.

A system description could answer the following questions:

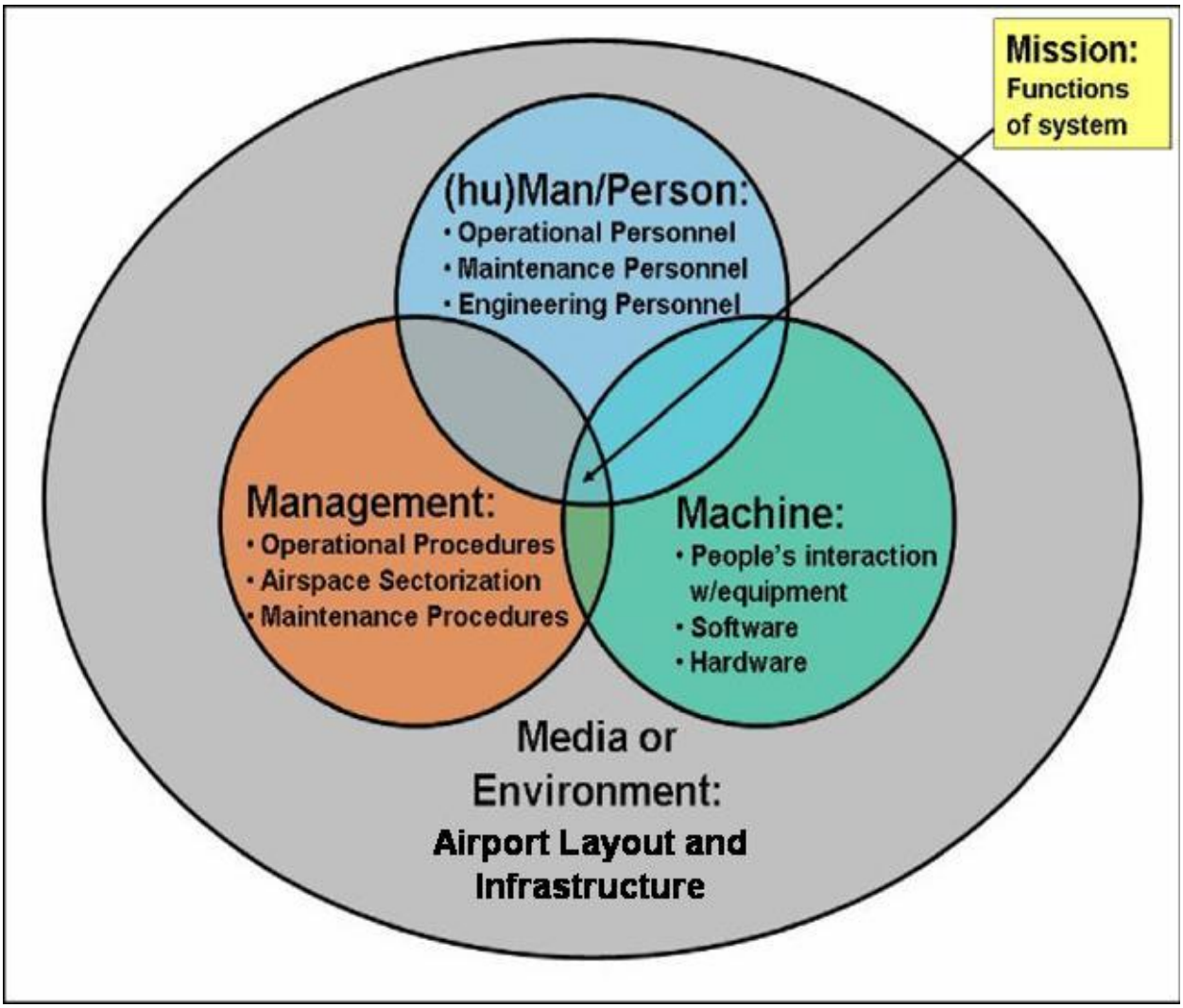
a. Are there visual or instrument meteorological conditions?

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 2 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 2 – 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 (i.e. airport).

The panel facilitator should complete (or obtain) most of the system or facility description in preparation for the SRM panel's first meeting. The facilitator can use the project proposal 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.

5.7.2 Step 2: Identify Hazards

The second step of SRM identifies hazards in a systematic way based on the system described in the first step. Order 5200.11 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. A hazard might or might not result in a situation of high 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 that are 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 Construction Safety and Phasing Plans, 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 (i.e. hazard, cause, effect or system state). The resulting hazards, causes, effects and system states can then be worked into the appropriate hazard analysis tool (see table above).

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 will help 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

Order 5200.11 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 may differ 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 FAA ACs are considered existing controls. Air

traffic control procedures detailed in FAA Order 7110.65, 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. Order 5200.11 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 on how to identify and analyze hazards in an airport environment.

5.7.3 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 likelihood of that is considered remote. However, a vehicle/pedestrian deviation (V/PD) is another possible outcome of the same hazard, with a much higher likelihood. The panel should consider both outcomes. For the worst credible outcome (or other selected outcomes), the panel must determine the likelihood and severity 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 Order 5200.11, 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 Order 5200.11. See Tables 2 and 3 below.

TABLE 2 – HAZARD SEVERITY CLASSIFICATION

Effect On:	Minimal 5	Minor 4	Major 3	Hazardous 2	Catastrophic 1
ATC Services	-Conditions Resulting in a minimal reduction in ATC services, or -A loss of separation resulting in a Category D Runway Incursion (RI), or -An Operational Deviation (OD), or -A Proximity Event (PE)	-Conditions resulting on a slight reduction in ATC services, or -A loss of separation resulting on a Category C RI, or Operational Error (OE)	-Conditions resulting in a partial loss of ATC services, or -A loss of separation resulting in Category B RI or OE	-Conditions resulting in a total loss of ATC services (ATC Zero), or -A loss of separation resulting in a Category A RI or OE	Conditions resulting in a collision between aircraft, obstacles or terrain
Flight Crew	-Flight crew receives TCAS Traffic Advisory informing of nearby traffic or, -Pilot Deviation (PD) where loss of airborne separation falls within the same parameters of a Category D OE or PE, or -Minimal effect on operation of aircraft	-Potential for PD due to TCAS Preventive Resolution Advisory (PRA) advising crew not t o deviate from present vertical profile, or -PD where loss of airborne separation falls within the same parameters of a Category C OE , or -A reduction of functional capability of aircraft but does not impact overall safety (e.g. normal procedures per AFM)	-PD due to response to TCAS Corrective Resolution Advisory (CRA) issued advising crew to take vertical action to avoid developing conflict with traffic, or -PD where loss of airborne separation falls within the same parameters of a Category B OE, or -Reduction in safety margin or functional capability of the aircraft requiring crew to follow abnormal procedures per AFM	-Near mid-air collision (NMAC) results due to proximity of less than 500 feet from another aircraft or a report filed by pilot or flight crew member that a collision hazard existed between two or more aircraft; or -Reduction of safety margin and functional capability of the aircraft requiring crew to follow emergency procedures as per AFM.	-Conditions resulting in a mid-air collision (MAC) or impact with obstacle or terrain resulting in hull loss, multiple fatalities, or fatal injury
Flying Public	Minimal injury or discomfort to passenger(s)	-Physical discomfort to passenger(s) (e.g. extreme braking action; clear air turbulence causing unexpected movement of aircraft causing injuries to one or two passengers out of their seats) -Minor injury to greater than zero to less or equal to 10% of passengers	-Physical distress on passengers (e.g. abrupt evasive action; severe turbulence causing unexpected aircraft movements), or -Minor injury to greater than 10% of passengers	Serious injury to passenger(s)	Fatalities or fatal injury to passenger(s)
Airport	No damage to aircraft but minimal injury or discomfort of little consequence to passenger(s) or workers	-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 damager 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

TABLE 3 – LIKELIHOOD DEFINITIONS

	NAS System & ATC Operational	NAS Systems		ATC Operational		Flight Procedures	Airports
		Individual Item/System	ATC Service/NAS Level System	Per Facility	NAS-Wide		Airport Specific
Frequent A	Probability of occurrence per operation/operational hour is equal to or greater than $1x10^{-3}$	Expected to occur about once every 3 months for an item	Continuously experienced in the system	Expected to occur more than once per week	Expected to occur more than every 1-2 days	Probability of occurrence per operation/operational hour is equal to or greater than $1x10^{-5}$	Expected to occur more than once per week or every 2500 departures, whichever occurs sooner
Probable B	Probability of occurrence per operation/operational hour is equal to or greater than $1x10^{-5}$	Expected to occur about once per year for an item	Expected to occur frequently in the system	Expected to occur about once every month	Expected to occur about several times per month		Expected to occur about once every month or 250,000 departures, whichever occurs sooner
Remote C	Probability of occurrence per operation/operational hour is less than or equal to $1x10^{-5}$ but equal to or greater than $1x10^{-7}$	Expected to occur several times during the life cycle of an item	Expected to occur numerous times in a system's life cycle	Expected to occur about once every year	Expected to occur about once every 3 years	Probability of occurrence per operation/operational hour is less than or equal to $1x10^{-5}$, but equal to or greater than $1x10^{-7}$	Expected to occur about once every year or 2.5 million departures, whichever occurs sooner
Extremely Remote D	Probability of occurrence per operation/operational hour is less than or equal to $1x10^{-7}$ but equal to or greater than $1x10^{-9}$	Unlikely to occur, but possible in an item's life cycle	Expected to occur several times in a system's life cycle	Expected to occur once every 10-100 years	Expected to occur about once every 3 years	Probability of occurrence per operation/operational hour is less than or equal to $1x10^{-7}$ but equal to or greater than $1x10^{-9}$	Expected to occur once every 10-100 years or 25 million departures, whichever occurs sooner
Extremely Improbable E	Probability of occurrence per operation/operational hour is less than $1x10^{-9}$	So unlikely that it can be assumed that it will not occur in an item's life cycle	Unlikely to occur, but it is possible in system life cycle	Expected to occur less than every 100 years	Expected to occur less than every 30 years	Probability of occurrence per operation/operational hour is less than $1x10^{-9}$	Expected to occur less than every 100 years

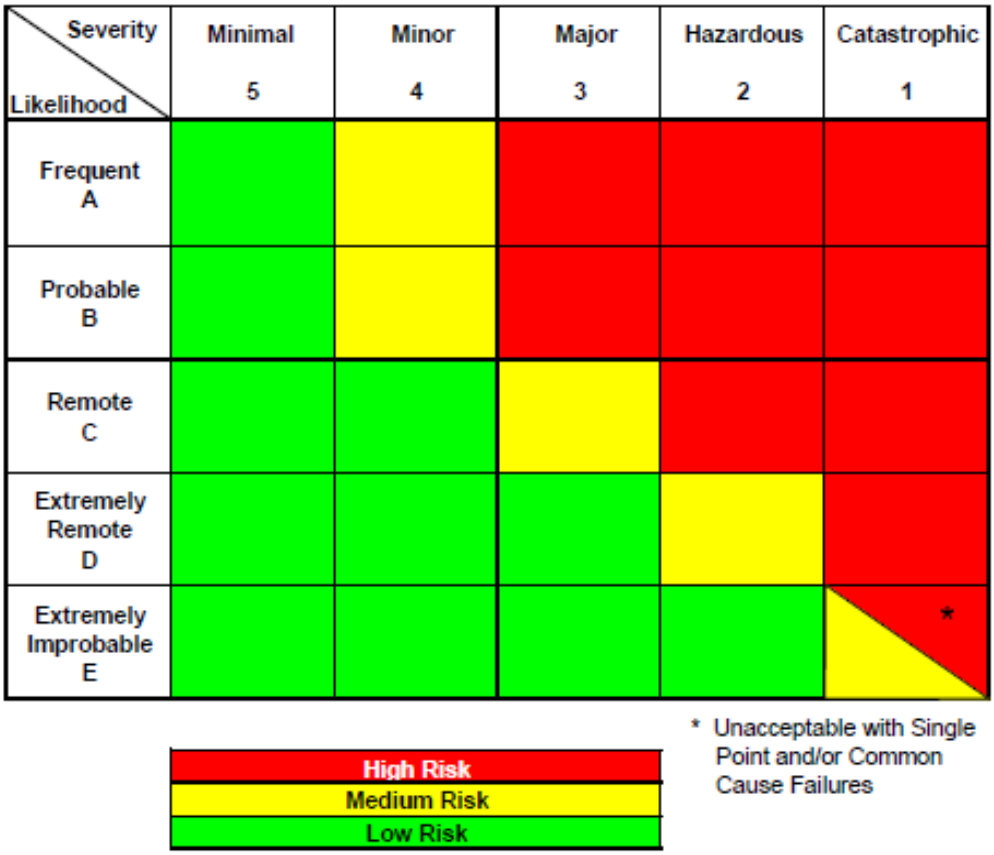
5.7.4 Step 4: Assess Risks

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 Order 5200.11 and displayed below.

FIGURE 3 – RISK MATRIX



Severity categories are listed on the horizontal axis of Figure 3, while likelihood categories are listed on the vertical axis. The colors denote the level of risk associated with the likelihood/severity combination. Order 5200.11 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. 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 as long as 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 lie based on the three categories of risk (i.e. 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, Order 5200.11 requires mitigation. Further, the signature level required for the SRM Safety Assessment will depend on the initial risk level (see Order 5200.11, Table 4-1, Safety Assessment Acceptance and Signature Requirement).

5.7.5 Step 5: Mitigate Risks

For risk that is higher than acceptable levels (red blocks on Figure 3), 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. The panel may find it helpful to refer to this list when developing mitigations.

5.8 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 the mitigation measures are implemented.

ARP will use the ARP SRM Tracking System (SRMTS) to ensure mitigations identified through the five-step process are completed and effective. Section 8 includes a description of the ARP SRMTS.

5.9 SRM Panel Documentation

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

A completed Safety Assessment includes:

a. Applicable completed SAS, signed by panel members, 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.)

b. Project Proposal Summary.

c. Hazard identification and analysis tool worksheet (i.e. 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 opinions).

e. Pictures, where applicable (i.e. tower siting, etc.).

The intent of the ARP SRMTS 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 Order 5200.11, provided the SRM addresses all ARP issues and risks.

Until the ARP SRMTS is fully operational, the responsible FAA office will retain completed SRM Safety Assessments on file for the life of the project.

Until the SRM Safety Assessment is final, all pre-decisional documents should be clearly marked "draft," and shall be considered internal deliberative documents that are not generally releasable under FOIA due to their deliberative nature.

5.10 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 (i.e. planning proposals) resulting from environmental review.

5.10.1 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.

5.10.2 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.

5.10.3 Facilitation of Reconvened Panels

Facilitation will only be 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 conference. The project manager or regional SMS coordinator can simply document the decision made by the panel. However, if the change requires detailed analysis and discussion, a facilitator should be acquired.

5.10.4 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.

5.10.5 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 Order 5200.11, Table 4-1).

5.11 SRM Decisions on ARP Operational or Safety-Related Issues

Other decisions on operations or safety-related issues may require FAA SRM Safety Assessment. These SRM processes should follow the most appropriate procedure outlined above for the specific case. If no precedent for an operational or safety-related case exists, consult the regional SMS coordinator or Office of Airport Safety and Standards for further guidance and analysis.

6 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."

The following sub-sections provide specific guidance for those triggering actions identified in FAA Order 5200.11, Paragraph 1-4. Each sub-section is similarly formatted to include applicable projects, documentation, panel guidance and recommended hazard identification and analysis tools.

6.1 Development and Update of ARP Standards

Order 5200.11 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 FAA advisory circulars (ACs). The SRM process must be completed before final approval of the new advisory circular standard.

ARP strives to update each AC at least once every 5 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 5-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.

6.1.1 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 Standards (SAS-3) form, some ACs ***will typically require*** further assessment if they modify:

a. Airport geometry requirements such as:
    i. Runway or taxiway safety areas or object free areas.
    ii. Required runway lengths or widths or taxiway widths.
    iii. Required turning radii.
    iv. Location and spacing of airfield lighting, signage and navigational aids.
    v. Runway and taxiway separation standards.
    vi. 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.

6.1.2 Required Documentation

All new and modified ACs require completion of the SAS-3, which is included in the ARP SRM Tracking System (SRMTS). Further, the completed Safety Assessment must be attached to the signature grid copy of the AC when it is submitted for ARP management review.

6.1.3 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 Order 5200.11 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 will assemble the SRM panel and arrange for a facilitator. Facilitators may be FAA personnel or consultants but must not have any vested interest in the subject matter.

6.1.4 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.

6.1.5 Hazard Identification and Analysis Tool(s)

The primary hazards identification and analysis tool associated with the development and modification of ARP standards is the Preliminary Hazard Analysis (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.

6.2 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 airport layout plan (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 modification of standards (MOS) (see Paragraph 6.5). 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.

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 approval process should be completed to ensure the alternatives are acceptable.

The environmental overview process is another important consideration during planning, although environmental approvals (other than Part 150 noise compatibility programs) 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 (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 Safety Assessment Screening (SAS) or conduct further Safety Assessment when indicated by the SAS.

Appendix B of Order 5200.11 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 the Office of Airport Safety and Standards (AAS-1).

6.2.1 Required Documentation

Planning projects should use Form 5200-8, Safety Assessment Screening for Projects (SAS-1), which is included in the ARP SRM Tracking System (SRMTS). An 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 (using the decision part of the tool).

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.

6.2.2 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 the objections anticipated in the airspace review.

6.2.3 Project Scope

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

6.2.4 Hazard Identification and Analysis Tool(s)

The recommended tool for Safety Assessments for airport planning projects is the Preliminary Hazard Analysis (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 Operational Safety Assessment (OSA). To compare multiple alternatives, consider using a Comparative Safety Analysis (CSA). Appendix I includes a sample OSA, CSA and PHA.

6.3 Airport Construction Safety and Phasing Plans

Order 5200.11 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 5100.38, Airport Improvement Program Handbook, and FAA Order 7400.2, Procedures for Handling Airspace Matters. FAA AC 150/5370-2, Operational Safety on Airports During Construction, defines the scope of the CSPP.

Each CSPP associated with an airport development project that could affect the airfield or tower operations requires SRM Safety Assessment. Depending on the complexity of the project, each CSPP may also require a 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 end-state system changes (i.e. a review of the airport's final condition once construction is complete). End-state system review should be considered during the Safety Assessment associated with planning actions. If these changes were not previously studied, the project may experience delays if end-state changes are not acceptable to all parties involved in the SRM, including FAA managers who must approve or disapprove the project.

6.3.1 Required Documentation

CSPP reviews should use Form 5200-8, Safety Assessment Screening for Projects (SAS-1), which is included in the SRM Tracking System (SRMTS). 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-1. See Paragraph 5.9, SRM Panel Documentation, for further information.

If the SAS results in a determination that a panel is not required, the project manager completes the SAS form and files appropriately.

If the SAS results in a determination 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, Operational Safety on Airports During Construction, 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, it will include a project Proposal Summary.

Proposed changes to the approved CSPP must be coordinated with the FAA project manager. As long as the project construction complies with and does not substantially change a CSPP that has already been reviewed for safety impacts, it does not require further Safety Assessment. The FAA project manager will coordinate with the regional SMS coordinator to determine if any proposed changes require additional Safety Assessment review (see Paragraph 5.10 for additional information).

6.3.2 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 before convening the SRM panel.

The project design engineer should submit the initial CSPP at as early as 25 percent but usually no later than 70 percent of design completion. It is understood that any CSPP developed at the 25-percent design is not going to fully address all phases of construction and safety. The project manager is nonetheless encouraged to review the CSPP at several phases throughout the design. In any case, a draft CSPP should be ready at least 6 months before the anticipated start of construction. 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. 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).

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

6.3.3 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.

6.3.4 Hazard Identification and Analysis Tool(s)

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

6.3.5 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.

6.4 49 CFR Part 150 Noise Compatibility Planning Projects

Under 14 CFR Part 150, Airport Noise Compatibility Planning, an airport sponsor requests that the FAA review and accept its noise exposure maps (NEMs) and approve the noise compatibility program (NCP). Measures proposed in the NCP that could affect safety critical elements of the NAS may require further Safety Assessment. Some of these measures include:

a. Preferential runway systems.

b. Use of flight procedures.

c. Noise abatement takeoff and landing procedures.

Proposed NCP measures ***do not require*** further Safety Assessment if:

a. They do not include the use of flight procedures.

b. They will be implemented landside or off-airport (such as land use controls, noise monitoring and acoustical treatments).

The Safety Assessment cannot be used to determine the preferred elements of the NCP.

ARP personnel who have questions about whether NCP measures require a Safety Assessment should consult with their regional SMS coordinator or the Office of Airport Safety and Standards (AAS-1).

6.4.1 Required Documentation

For NCP measures, use Form 5200-8, Safety Assessment Screening for Projects (SAS-1), which is included in the ARP SRM Tracking System (SRMTS). 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-1.

For projects not requiring a panel, the project manager should sign the SAS-1 and add it to the project file.

6.4.2 Record of Approval

Under Part 150, elements of the NCP are automatically assumed to be approved by the FAA unless otherwise determined within the 180-day review period. Accordingly, the SRM Safety Assessment should be completed before notice of the accepted NCP is published in the Federal Register for public review and comment and the FAA issues its Record of Approval (ROA).

When the SAS-1 indicates further assessment (i.e. panel formation) is needed, FAA's approval of an NCP must be contingent on the completion of the Safety Assessment. The FAA determination in the ROA must state the proposed measures may only be implemented after the completion of an SRM Safety Assessment and panel review, as appropriate.

6.4.3 Project Scope

The consultant scope of work should include work items for SRM Safety Assessment and panel facilitation, as required. The scope of work should include the schedule of the SRM and associated time requirements.

6.4.4 Hazard Identification and Analysis Tool(s)

Safety Assessments for NCP measures impacting aviation safety should use the Preliminary Hazard Analysis (PHA). For comparison of multiple alternatives, a Comparative Safety Analysis (CSA) may also be useful. See Appendix I for samples of these tools.

6.4.5 Final Documentation

The results of the completed Safety Assessment, panel findings, mitigations and other related documents should be included in the NCP and the project file.

6.5 Modification of FAA Airport Design Standards

FAA Order 5300.1, 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 Order 5200.11 does not change any provision of Order 5300.1. The Safety Assessment required under Order 5200.11 and this guidance document supplements and provides additional documentation to support the FAA's review and decisions on airport sponsor MOS requests.

While all FAA MOS approvals require documentation that a FAA Form 5200-9, Safety Assessment Screening for Projects (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 a MOS requires a Safety Assessment should consult with their regional SMS coordinator or the Office of Airport Safety and Standards (AAS-1).

6.5.1 Process

In accordance with Order 5300.1, MOS requests must first be approved by AAS, before considering SRM Safety Assessments.

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 AAS approval and SRM/Safety Assessment process should be completed before moving forward with final draft planning documents, final design or further action that requires the MOS decision.

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

a. The receiving Regional Office or ADO evaluates the MOS request. If the Regional Office/ADO agrees with the MOS justification and supporting documentation, then it completes the MOS form and forwards it to AAS-1 for Headquarters action. (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.)

b. 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.

c. 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 Order 5200.11 and this Desk Reference document.

d. The Regional Office or ADO will then coordinate 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.

e. The completed record of AAS approval plus the completed Safety Assessment documents constitute the MOS approval. A 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 a MOS requires a Safety Assessment should consult with their regional SMS coordinator or the Office of Airport Safety and Standards (AAS-1).

6.5.2 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 a 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.

6.5.3 Prior MOS Approvals

Existing FAA-approved MOS and existing non-standard conditions are considered part of the "safety baseline" in accordance with Order 5200.11. A safety baseline is a point-in-time description of a system or facility safety, normally reflecting existing conditions. Per Order 5200.11, a safety baseline for the ARP SMS is set as of June 1, 2011. Refer to Section 3 above for the ARP schedule to phase-in airports into SRM.

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 or construction phasing for projects that require FAA approval actions that directly affect the existing MOS or non-standard condition.

6.5.4 Required Documentation

All FAA MOS approvals should use Form 5200-9, Safety Assessment Screening for Modification of Standards (SAS-2), which is included in the ARP SRM Tracking System (SRMTS). 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.

6.5.5 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, a MOS for airport design separation standards should be identified and approved during the planning process in connection with ALP approvals.

6.5.6 Hazard Identification and Analysis Tool(s)

The primary risk assessment tool for MOS approvals is the Preliminary Hazard Analysis (PHA). For comparison of multiple alternatives, a Comparative Safety Analysis (CSA) may also be useful. See Appendix I for a sample PHA and CSA.

6.5.7 Final Documentation

The completed SAS-2, hazard assessment tool, panel narrative and any other relevant documents must be attached to the AAS-approved MOS request form. 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 Order 5300.1. (Ultimately, MOS forms will be completed, routed and tracked through the ARP SRM Tracking System discussed in Section 8 of this document.)

6.6 Airspace Determinations for Non-Construction Changes

The requirement to conduct SRM Safety Assessment before FAA approval of certain non-construction changes is included in Order 5200.11 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 are identified by the voluntary employee reporting system (see Paragraph 9.2.1) and other airport changes for which the FAA believes an SRM Safety Assessment is necessary to document an FAA approval action.

6.6.1 Required Documentation

The usual FAA review and triggering action for these non-construction changes is when the airport sponsor submits FAA Forms 7480-1, Notice of Proposed Landing Area, and 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 Projects (SAS-1), which is included in the ARP SRM Tracking System (SRMTS). 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 should sign the SAS-1 form and place it in the appropriate file. A copy of the SAS-1 form will also be preserved by the ARP SRM Tracking System.

If the SAS-1 indicates an SRM panel is needed for further Safety Assessment, the project manager should follow the procedures outlined in Section 5 to inform the airport sponsor and convene an SRM panel. A completed Safety Assessment with panel documentation, according to Paragraph 5.9, should be included in the appropriate file.

6.6.2 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.

6.6.3 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 scope of work in Appendix F may be useful as a guide for non-construction changes.

6.6.4 Hazard Identification and Analysis Tool(s)

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

7 FUNDING SRM-RELATED ACTIVITIES

7.1 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.

7.1.1 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 5100.38, AIP Handbook. 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 of PFC funds, PFC-eligible project formulation costs can be reimbursed with PFC funds 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.

7.1.2 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 discussed in the AIP Handbook.

7.2 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.

However, projects that affect 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.

8 ARP SRM TRACKING SYSTEM (SRMTS)

FAA Order 5200.11 requires ARP to develop a tracking system for tracking hazards and monitoring accountability. To accomplish this, ARP is establishing the SRM Tracking System (SRMTS), which will also serve as a tool to perform its SRM workflow function. The SRMTS will be the central location for generating forms, coordinating SRM documents, tracking hazards and mitigation, providing data for proactive safety assurance and documenting SRM Safety Assessments.

As of publication of this SMS Desk Reference document, the SRMTS is under development. However, the features and function of the SRMTS are described below. The SRMTS development will include requirements for a separate detailed user guide.

The SRMTS intends to utilize the same FAA-owned application software used by other FAA offices for SMS compliance. The application is designed to conduct risk assessments and track identified hazards. It has many commonly used risk assessment tools built into the application. (The commonly used hazard identification and risk analysis tools for ARP approvals are Preliminary Hazard Analysis or PHA, Comparative Safety Analysis or CSA and Operational Safety

Analysis or OSA.) The application also includes functions for queries of safety data, reporting on mitigations and archiving documentation.

8.1 SRMTS Requirements

The requirements for the SRMTS are derived from Order 5200.11 and the ARP SMS Implementation Team. ARP will consolidate the SRM workflow function (data entry, document generation and data analysis) into a single site/source.

The basic SRMTS requirements are:

a. Provide data entry, repository, reporting, analysis and documentation of the Safety Risk Management process defined by Order 5200.11.

b. Electronically generate and capture Safety Assessment Screening (SAS) information from FAA Forms 5200-8, 5200-9 and 5200-10.

c. Capture SRM panel risk analysis findings from the hazard identification and risk analysis tools used (PHA, OSA or CSA).

d. Make available hazard identification, risks assessment and mitigation requirements to a wide audience of SRMTS users.

e. Allow for comments and document revisions, including preliminary risk analyses to be shared among a key group of stakeholders for each project proposal. The system will be able to track history and milestones in the development of each project proposal through the final signature of the SAS.

f. Generate the completed SRM Safety Assessments for signature by the appropriate FAA manager(s).

g. Be accessible to users outside the FAA firewall to allow outside parties to enter data and post documents. Therefore, the system will be developed with separate server seats or with a proxy server established inside the existing FAA servers. Data sharing between FAA users and outside users will be as seamless as possible with minimal intervention or supervision by FAA personnel.

8.1.1 Final Documentation

The completed SAS form, hazard assessment tool, panel narrative and any other relevant documents must be attached to the airport sponsor's request and retained in the project files. In addition, when the FAA project manager completes the SAS form on a computer logged into the FAA network, the SAS forms are saved to a master file for data management and future upload to the SRMTS.

8.2 SRMTS Users and Access

Potential SRMTS users include ARP personnel, airport sponsors, state block grant representatives, airport consultants and SRM panel facilitators.

The SRMTS will be accessible over the internet from FAA ARP offices and remote locations. The SRMTS will be a tool for facilitators during SRM panels to guide the group through the hazard assessment and risk mitigation process.

The SRMTS will also have the capability to operate in a standalone mode for cases where internet access is not available or communication systems malfunction. This will allow SRM panels to complete forms, document hazards/risks/mitigations and complete SRM panel documentation if the system or internet access is not available. SRM panel data generated can be uploaded to the main SRMTS application at a later time.

8.3 Interim SRM Tracking System

Until the SRMTS is operational, ARP has developed an Interim SRMTS using a spreadsheet tool to track and manage the SRM documents. This spreadsheet is available on the FAA internal shared computer drive. The spreadsheet contains the appropriate SAS forms and hazard assessment tools (PHA, CSA and OSA). The forms can be downloaded and used for SAS screening and for recording the decisions and results of SRM panels. When the SRMTS becomes operational, the data from the interim spreadsheet tool will be uploaded into the permanent SRMTS.

9 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.

9.1 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 5200.11 describes these steps in detail. Additional guidance on Safety Assurance is provided below.

9.2 Implementation of Safety Assurance Processes

Safety Assurance (SA) is the last SMS component that will become fully operational since it builds upon the processes and procedures of the other three components. However, earlier SMS processes and procedures (i.e. hazard tracking and documentation) must be developed in such a way that they can be integrated into the Safety Assurance processes. In the interim, some Safety Assurance processes will be made available as ARP SMS is implemented.

Safety Assurance will primarily be the responsibility of the Office of Airport Safety and Standards in accordance with Order 5200.11.

9.2.1 The Voluntary Reporting System

ARP is establishing a Voluntary Reporting System. This system will be implemented using the FAA ARP Certification and Compliance Management Information System or CCMIS. The system will be available to all ARP employees. Use of the system 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 this system is to identify hazards that are:

a. Identified outside of the normal SRM process (i.e. 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 (i.e. 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 Voluntary Reporting System will enhance the existing SMS process; it is not a substitute for SRM or the SRM Tracking System.

9.2.2 Hazard and Mitigation Tracking

Hazard and mitigation tracking is the core of the SA process. The results of SRM are expected to provide the bulk of the data for the SA. SRM panels will ensure hazards, risk levels and mitigations are collected and input into the ARP SRM Tracking System (SRMTS) and are available for analysis and reports.

It is anticipated that a single system, the SRMTS, will be used to input the SAS and SRM panel documentation as well as allow for data analysis and reporting.

The project manager is encouraged to ensure the data entered into the SRMTS 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. Hazards identified in the SRM Safety Assessment should be addressed through the SRMTS only and not through the Voluntary Reporting System.

See Section 8 for more information on the SRMTS.

9.2.3 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. Details on airport safety data will be provided under separate guidance.

10 SAFETY PROMOTION

Safety Promotion includes the actions to create a work environment where SMS objectives can be achieved. Two key elements of Safety Promotion include communication and training. As ARP implements its SMS, it will take numerous steps to ensure the goals and requirements of the SMS are communicated and that employees receive appropriate training.

10.1 Training

ARP developed a modular training system comprised of electronic and in-class courses to assist employees and the industry in understanding and applying ARP SMS. Currently, the training system includes four courses:

a. **ARP SMS Overview** – eLMS Course FAA 06000005 – 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 the Integrated Distance Learning Environment (IDLE).

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. Initial deployment in Fiscal Year (FY) 2011 with trainers traveling to present at Regions. Beginning in FY 2012, it will be available as a resident course through the FAA Academy in Oklahoma City, Oklahoma.

c. **ARP SRM Facilitation** – Integrated Distance Learning Environment (IDLE) course – Web-based course that explains the requirements of ARP SRM facilitation. Intended for audiences that already have facilitation skills. Available to FAA employees and the airport industry via eLMS (employees only), IDLE and other web applications.

d. **Managing the SMS Effort** – eLMS Course (future) – Web-based course that explains the role of managers in ARP SMS, including signature authority, communications, etc. Available to all ARP managers via eLMS. (In development at the time of Desk Reference publication.)

After implementation, the Office of Airport Safety and Standards (AAS-1) will determine the need and timing for releasing additional training courses in accordance with FAA Order 5200.11. ARP SMS Overview and SRM Facilitation courses offered through eLMS for employees will be available to the public through the Integrated Distance Learning Environment (IDLE). The ARP SRM Practitioner course will be offered as needed based on demand and may also be available to non-FAA personnel.

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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.

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 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.

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.

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.

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.[1]

[1] Refer to Safety Risk Management Guidance for System Acquisitions, Version 1.4a, February 8, 2007.

Construction Safety and Phasing Plan (CSPP) – A CSPP is a plan all airport sponsors must submit for FAA review and approval that specifies all aspects of safety during construction. Requirements for CSPP reviews are contained in FAA Order 5100.38, AIP Handbook, Advisory Circular 150/5370-2, and FAA Order 7400.2, Procedures for Handling Airspace Matters.

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 Parts 77, 152 and 157.

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.

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.

National Airspace System (NAS) – The network of air traffic control facilities, air traffic control areas and navigational facilities throughout the United States.

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 14 CFR Parts 77 and 157 and guidelines established in FAA Order 7400.2.

Passenger Facility Charge (PFC) – A fee collected for every 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.

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

Safety Assessment – The completion of the applicable SAS, the SRM five-step process of identifying and analyzing hazards and documentation of the SRM panel's findings, as applicable.

Safety Assessment Screening (SAS) – An FAA form (5200-8, 5200-9 or 5200-10) used to document the ARP Safety Assessment process. It is used to document the appropriate level of assessment, the five steps of SRM and the final signatures and approvals.

Safety Risk Management (SRM) – A standard set of processes to identify and document hazards, analyze and assess potential risks and develop appropriate mitigation strategies.

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

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

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.

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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 http://www.icao.int/anb/safetymanagement/Documents.html.]

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 http://www.jpdo.gov/library.asp.]

c. FAA Order 8000.369, Safety Management System Guidance, 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 5200.11, FAA Airports (ARP) Safety Management System, August 30, 2010, 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, Version 2.1, May 2008, or 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.]

Appendix C: SRM Panel Contact Information for FAA Subject Matter Experts

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 subject matter experts (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.

SME Request Order of Precedence

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

a. At airports with an air traffic control tower:
   i. Air Traffic Control Tower Manager (ATO-Terminal Services representative)
   ii. 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 air traffic control tower:
   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 (AJV-X) for projects affecting aeronautical information management, procedures development or OE/AAA
   ii. NextGen (AVP-19) for NextGen-sponsored projects or prototypes at towered or non-towered airports

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 (AJW-X) (ATO-En Route and Oceanic Services representative)

d. Flight Standards Regional Office (AXX-200)

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 office, the Office of Airport Safety and Standards (AAS-1). Forward the information including parties contacted and the date and time of attempted contact for AVS participation (including Flight Standards). AAS will contact the respective AVS Headquarters Division

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). AAS will then contact the respective Headquarters Division or Director.

a. ATO-Safety, Safety Risk Management Group (AJS-22)

b. ATO-Terminal Services, Safety Engineering Manager (AJT-25)

c. ATO-En Route and Oceanic, Safety Manager (AJE-38)

d. ATO-System Operations Services, Safety Risk Management Manager (AJR-C1)

e. ATO-Technical Operations, Safety Manager (AJW-18)

f. ATO-NextGen and Operations Planning, Safety Manager (AJP-19)

g. AVS Office of Accident Investigation and Prevention, Safety Management and Research Planning Division (AVP-300)

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/

and click the "Branches" link for the desired region.

**A dynamic Excel file with links to this contact information will be made available in the Airports section of MyFAA site and below (hold the Ctrl key and click on the link).

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 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: Reserved.

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Appendix E: Sample Safety Assessment Screening for Projects (SAS-1) and Instructions (Sample below is for **reference only**. Actual SAS Forms and Instructions should be obtained through the SRMTS or through the FAA ARP shared Q: drive.)

Airports Safety Risk Management (SRM)

Safety Assessment Screening for Projects (SAS-1)

1. Project Location

a. Locid ___ **SMS ID:** _____

b. Airport

c. City

d. State

e. Sponsor

f. Service Level

g. CFR 139 Date

h. CFR 139 Type

2. Describe the Proposed Action (Include any identifying number or date of submission (e.g., date of ALP))

3. Approval Action Type/Triggering Event (Select all that apply)

a. ☐ Airport Layout Plan (ALP) (new or update)
b. ☐ Airport construction review, coordination, and approval
c. ☐ Other airport changes not involving construction
d. ☐ Part 150 Noise Compatibility Program (measures that may affect aviation safety)

4. Project Screening

a. ◯ A preliminary analysis indicates that an SRM review is required (Complete pages 2 & 3)
b. ◯ The proposal does not require further SRM review (Discard pages 2 & 3)

Prepared by: _____

Office: _____ Signature: _____

Title: _____ Date: _____

Safety Assessment Screening for Projects (SAS-1)

SMS ID: 0

5. Was the proposal reviewed by OE/AAA?

a. ◯ Yes ◯ No (Skip to block number 6)

b. Case Number: _____

c. Determination Date: _____

d. ☐ OE/AAA review comments attached.

e. ☐ OE/AAA review indicates an objection to the proposal.

6. A review of the proposal indicates the following: (Select all that apply)

ARP System Safety Impact Checklist

a. ☐ The Proposed Action may deviate from applicable FAA standards

b. ☐ The Proposed Action may increase aviation safety risks, with existing controls in-place

c. ☐ The Proposed Action may affect aviation operations with existing controls in-place

d. ☐ The Proposed Action my affect navigational aids

e. ☐ The Proposed Action may impact TERPS surfaces

f. ☐ Other Safety Impact: _____

SRM Panel

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

h. ☐ The Safety Impact Checklist indicates that an SRM panel is required

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

7. SRM Finding of No Increased Risks

The proposed action was reviewed with respect to standard hazards and existing controls. Potential risks were evaluated with appropriate FAA personnel, airport operations, and other aviation officials with safety responsibilities. Based on this review, e

Name and Title	**Date**	**Signature**

8. SRM Panel and Findings

a. Report date: _____ **b.** ☐ Report attached

9. Initial Risk Determination

a. ◯ Low initial Risk. Attach supporting documentation.

b. ◯ Medium Initial Risk. Attach detailed explanation of hazards.

c. ◯ High Initial Risk. Attach detailed explanation of hazards.
(Requies review by ARP Safety Review Board)

10. Final Risk Determination

a. ◯ Low Risk. Attach detailed explanation of mitigating measures, including NOTAM requirements.

b. ◯ Medium Risk. Attach detailed explanation of mitigating measures, including NOTAM requirements.

c. ◯ High Risk. The project proposal with risk mitigation in place is unacceptable.

Safety Assessment Screening for Projects (SAS-1) **Page 3**

SMS ID: 0

11. 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 and Title	Date	Signature

12. Airport 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.

Name and Title	Date	Signature

13. FAA SRM Approval

Hazards were identified and analyzed using standard procedures and processes in accordance with FAA Order 5200.11. 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.

Name and Title	Date	Signature

FAA Form 5200-8 (##-11) (Instructions on page 4)

Instructions for FAA Form 5200-8

ARP Safety Assessment Screening for Projects (SAS-1)

General

Use Form 5200-8 (SAS-1) to document the Safety Risk Management (SRM) process for airport planning and development projects in accordance with FAA Order 5200.11. The SAS should be completed and signed prior to final FAA approvals or determinations in connection with the following triggering events:

- Airport layout plan (ALP) approvals
- Airport construction project review, coordination and/or approval for federally obligated airports. This includes review of construction safety and phasing plans in accordance with Advisory Circular 150/5370-2, Operational Safety on Airports During Construction.
- 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.
- Part 150 noise compatibility program approvals that affect aviation safety.

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, Airport Improvement Program Handbook.

Purpose

A completed and signed SAS documents the SRM process for the FAA Office of Airports (ARP). It is intended to 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 should be completed before the final ARP action (approval, determination, etc.) for the triggering event. An OE/AAA airspace study, if applicable, should be completed before completing of the SAS.

Availability

This form is available electronically at https://employees.faa.gov/org/linebusiness/arp/programs/sms/.

Data Block Instructions

Block 1. **Project Location.** Identify the project location, type of airport and the airport sponsor responsible for executing the project.

Project ID is a unique number that identifies the proposed action (block 2). It will be used to identify and coordinate the SAS and for future reference. Do not use the AIP grant number, OE/AAA NRA case number or any other existing number. Consult program guidance for specific instructions on assigning the Project ID.

Block 2. **Proposed Action.** Be as specific as possible about the airfield components and systems affected by the proposal. For example, "Reconstruct Runway 12/30 and entrance taxiways 'A', 'B', and 'C'."

Block 3. **Approval Action Type.** Select the triggering event(s) for the proposed action, indicating why SRM is required by Order 5200.11.

Block 4. **Project Screening.**

a. ***If any item in Block 3 is checked,*** select 4a. *A preliminary analysis indicates that the proposal requires SRM*, and complete pages 2 and 3.

b. ***If no items in Block 3 are checked,*** select 4b. No further SRM review is required. Discard pages 2 and 3, and complete and sign the signature block. Block 4 should be signed by the individual responsible for reviewing or approving the triggering event, unless otherwise indicated by supplemental program guidance.

Block 5. **OE/AAA Review.** Complete each line item as follows:

a. Indicate whether an OE/AAA airspace review has been completed. If no, proceed to Block 6. If yes, go to item b.

b. Enter the NRA airspace case number from the OE/AAA.

c. Enter the date of the determination, if the review is complete.

d. Consider attaching the OE/AAA review comments to expedite review and approval of the proposal.

e. Select this box if the OE/AAA review resulted in a final objection from any FAA office that cannot be resolved before issuing the final determination.

Block 6. **ARP System Safety Impact Checklist.** Select all items (**a**) through (**f**) that apply. There are numerous existing controls that mitigate standard or documented hazards and would eliminate any potential increase in risk. Select items in the checklist if the proposal introduces new or unusual hazards for which there are no existing controls or if the application of existing controls would have an adverse impact on airfield or aircraft operations. Note that large or complex projects that involve numerous systems and FAA standards are more likely to require special controls to properly manage the risks:

a. The proposed action could require a deviation from any FAA airport design or other standard or regulation.

b. The proposed action could introduce new risks that would not be mitigated by existing controls.

c. Existing controls would have an adverse effect on airfield or aircraft operations. For example, existing controls might require approach minimums to be raised.

d. The proposed action could require a deviation from any FAA navigational aid or facility siting standard.

e. The proposed action impacts TERPS surfaces, whether the impact would adversely affect aviation operations or not.

f. Identify any other hazard or safety impact that could create an increased risk for the airport.

Supplemental program guidance may provide additional instructions for completing the System Safety Impact Checklist.

SRM Panel. Determine whether a panel is required.

g. ***If Block 5 item (e) is checked,*** select item (**g**). An SRM panel is required.

h. ***If any items in the Safety Impact Checklist are checked,*** select item (**h**). An SRM panel is required.

i. ***If neither item (g) nor (h) is selected,*** select item (**i**), sign block 7 and discard page 3. Otherwise skip to block 8.

Block 7. **SRM Finding of No Increased Risks.**

If block item (**6i)** is checked, the Safety Impact Checklist indicates that there are no increased risks associated with the proposed actions. This finding indicates that only previously known and evaluated hazards will be introduced by the proposal and that existing controls will be used to ensure that risks are mitigated. A signature on block 7 indicates that the reviewer has knowledge that existing controls can and will be applied to the proposal. Note that risks cannot be expected to remain at acceptable levels when controls are not implemented (for any reason). Block 7 should be signed by the individual responsible for reviewing or approving the triggering event, unless otherwise indicated by supplemental program guidance. Leave blocks 8, 9 and 10 blank because an SRM panel is not required.

Block 8. If an SRM panel is required (Block 6, items (**g**) or (**h**)), refer to Order 5200.11, chapter 4, paragraph 8, for the composition, conduct, findings and final report of the panel. Supplemental program guidance may provide additional instructions for the panel, findings and report.

Block 9. Indicate the SRM panel's initial risk determination. This is the unmitigated risk associated with the project proposal. Select that highest initial risk found for each of

the hazards identified by the panel. Use Order 5200.11, Appendix C, to select the appropriate initial risk level.

Block 10. Indicate the SRM panel's final risk determination. This is the estimated residual risk after all mitigations proposed by the SRM panel are in-place. Use Order 5200.11, Appendix C, to select the appropriate final risk level.

Block 11. Have each panel member certify that all appropriate hazards are identified and that reasonable mitigation measures were considered by the panel. This certification is **not** an agreement to the findings of the panel (risk level), but an indication that each panel member believes that the panel performed a thorough job of identifying hazards and considering appropriate mitigations.

Block 12. If an SRM panel is required (block 6, items (**g**) or (**h**)), have the airport sponsor sign. Airport sponsors have direct control for controlling hazards and risks associated with airport operations. Airport signature is acknowledgement of the risks and responsibility for implementing and maintaining risk mitigation strategies. It provides for coordinated Safety Risk Management between the FAA and the airport.

Block 13. Sign the SAS. Obtain the correct signature. FAA approval represents an endorsement that all hazards have been considered and that risk levels will remain acceptable provided that risk mitigations remain in-place. The FAA signature level for approval is determined by the panel's initial risk level findings as follows:

a. **High Initial Risk**. ARP Safety Review Board review and ARP-1 approval.

b. **Medium Initial Risk**. Regional ARP Division Manager with authority over the change.

c. **Low Initial Risk**. Airport District Office or regional branch manager with authority over the change.

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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:

- **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 5.6.1 for more information on panel facilitators.)

- **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 10.1).
- Complete the FAA SRM Panel Facilitation course (Paragraph 10.1).
- Consult with the ARP project manager and regional SMS coordinator about pertinent issues and current SRM 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 5.6.)
- Entering data into the ARP SRMTS 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 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 30-core Certified Master Facilitator™ (CMF) Competencies of the International Association of Facilitators (or equivalent).
- It is desirable, although not mandatory, that facilitators have knowledge of Safety Management Systems and the terms used by the FAA.
- Regardless of prior experience with SMS, all facilitators are expected to complete the ARP SMS Overview 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. (FAA Advisory Circular 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 above.
- 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 Advisory Circular 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 5.9.) Record SRM panel findings of hazards, risks and mitigations in the ARP SRM Tracking System (SRMTS).

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.[2] 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 7.1.1). Also be sure that design-only AIP grants include provisions for development, coordination and SRM for each anticipated CSPP.

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

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 Comparative Safety Assessment (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

Appendix G: Preliminary Hazards and Existing Controls for Construction

This appendix contains preliminary findings of a national Safety Risk Management Decision panel that was held in 2010. It attempted to identify principal component hazards associated with typical airfield construction projects. 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	

Hazard Number	Hazard	Initial Risk	
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, TERPS and others)	5C Low	

Existing Controls	***Hazards***													
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***
AC 150/5300-13 Design Standard		x												
AC 150/5380-5 Debris Hazards	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 Safety During Construction	x	x			x		x	x	x	x	x	x	x	x
AC 150/5200-18 Self-Inspection	x													
AC 150/5340-18 Standards for Airport Signs		x	x		x	x	x			x	x	x		x
AC 150/5380-5 Debris Hazards at Civil Airports	x													
Vehicle Operator Intervention									x				x	
Airfield Operations Monitoring	x			x						x	x			
AT 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					
7110.65 Air Traffic Control									x					

Existing Controls	***Hazards***													
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***
AC 91-73 Flight Crew Procedures during Taxi		x	x			x	x							
AC 120-74 Single Pilot Procedures during Taxi		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 Technical Operations NAS Integrated Risk Management								x		x				
Ops Specs									x					
Redundant Systems								x		x				
CFR Part 139	x			x			x		x		x	x	x	x
Airport Rules and Regulations														
Briefings (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	

Existing Controls	***Hazards***													
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***
Ground / Air Surveillance									x					x
PIREPS	x			x										
Airfield Inspections	x													
CFR Part 77	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
OEAAA Airspace Procedures	x	x		x	x		x		x	x	x	x		x
JO 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 Order											x			
Pre-construction Meetings												x		

Existing Controls	***Hazards***													
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***
Part 121, 135 Operator Driver Training												x		
AC 150/7460-1 Obstruction Lighting and Marking														x

Appendix H: Sample Project Proposal Summary

Proposal Summary

The 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 Proposal Summary allows SRM panel members as well as anyone reviewing the proposal to quickly understand relevant operational and safety factors. Although they are subject matter experts 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 5.7.1). The SRM panel (if needed) may want to revise or append the SRM system description, but the 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. FAA airport sketches are available at http://aeronav.faa.gov/index.asp?xml=aeronav/applications/d_tpp

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 modifications of standards, 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 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. (See FAA Order 5200.11, Paragraph 4-5.) An Operational Safety Assessment is the typical SRM tool employed for these situations (see Paragraph 5.7.2). Therefore, in this case, do not include system changes in the project proposal.

ii. Airport layout plans 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.

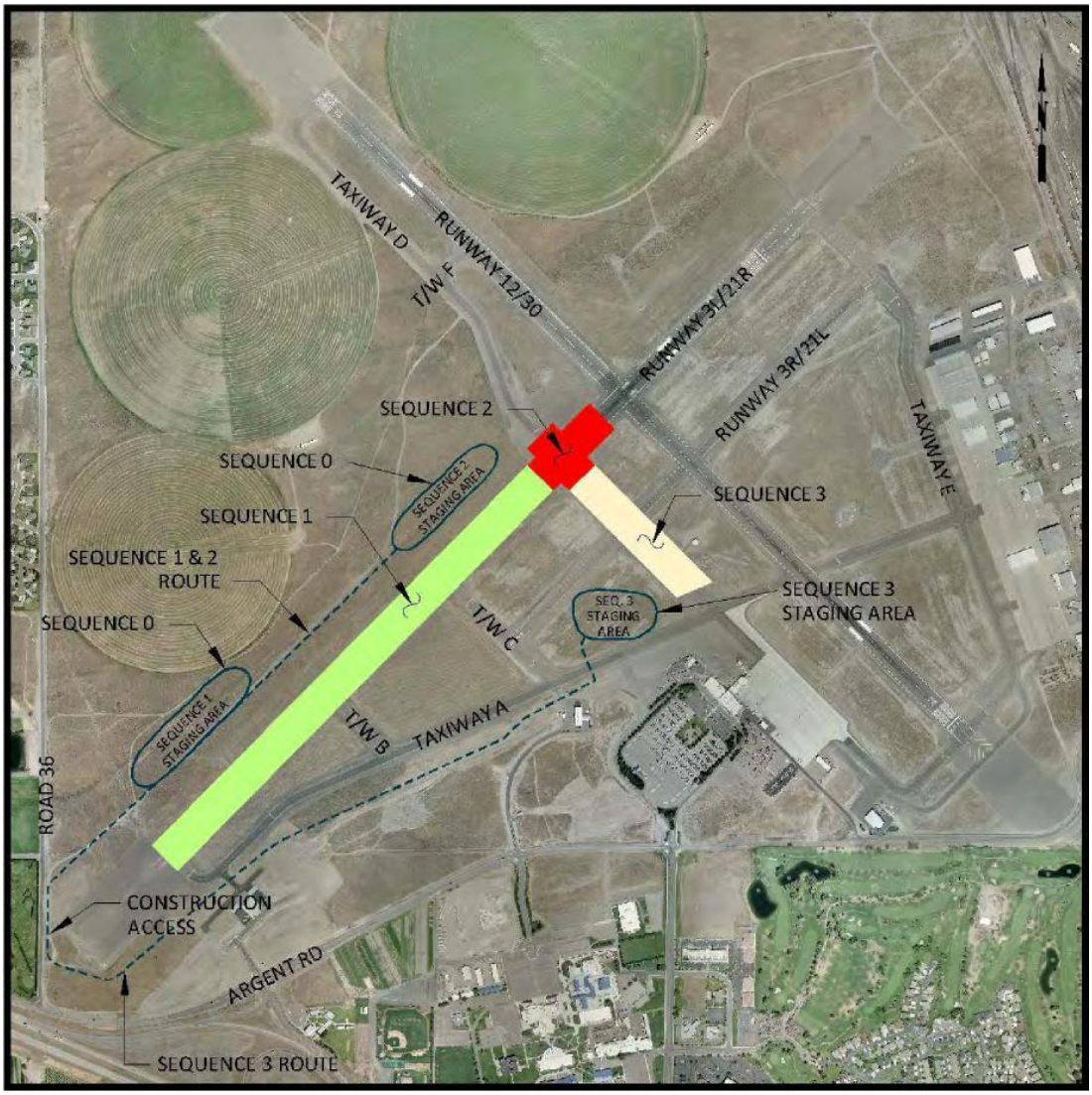
iii. Construction safety and phasing plans typically involve many temporary system changes as facilities are closed, constructed and reopened. Each phase of the construction project should be clearly depicted, including temporarily closed facilities and alternate (temporary) taxiway, construction equipment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

iv. Modifications of standards 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 a 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 a 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 with 11x17 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 A – All Construction Phases



The total construction duration is 85 days. The following is an approximate schedule for this project, which is subject to project funding:

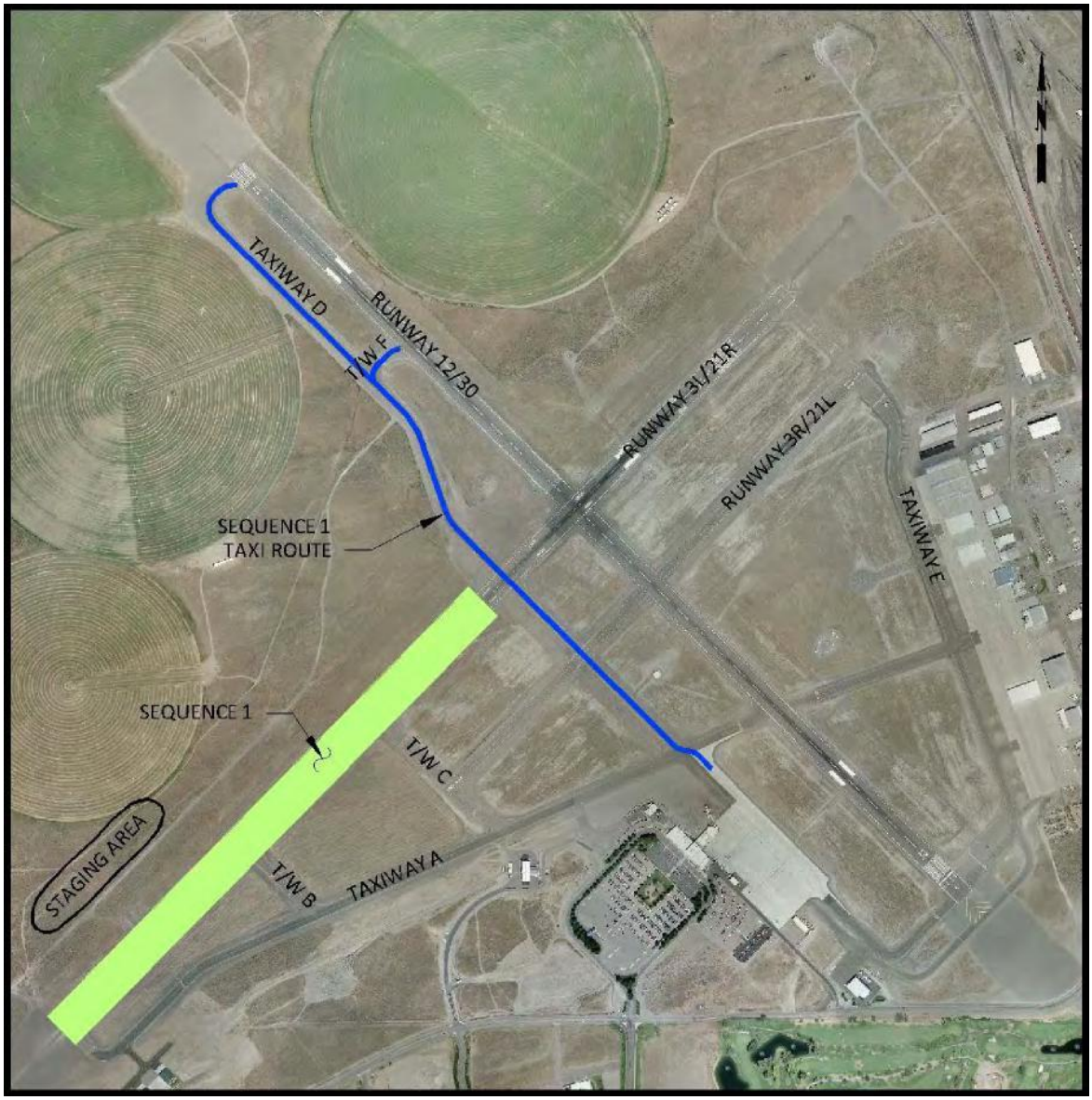
Construction Phase	**Approximate Construction Window**	**Number of Days**
Phase Zero	April 8, 2010, to April 14, 2010	5
Phase One	April 15, 2010, to May 12, 2010	20 work days (30 calendar)
Phase Two	May 13, 2010, to June 10, 2010	20 work days (30 calendar)
Phase Three	June 11, 2010, to July 23, 2010	30 work days (45 calendar)

Phase One

Sequence 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.

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

Figure B – Sequence One



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Appendix I: Safety Assessment Tools

Tools to assist the Safety Assessment include the PHA (Preliminary Hazard Assessment), CSA (Comparative Safety Assessment) and OSA (Operational Safety Assessment). These worksheet tools will be incorporated into and generated by the ARP SRM Tracking System (SRMTS).

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 case.

Preliminary Hazard Analysis (PHA)

The PHA provides an initial overview of the hazards presented in the overall flow of the operation. It provides a hazard assessment that is broad, but usually not deep.

FIGURE I-1 – PRELIMINARY HAZARD ANALYSIS (PHA) WORKSHEET

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
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30														

SAMPLE PRELIMINARY HAZARD ANALYSIS (PHA)

Sample PHA					
Project Title:					
Additional Project Information:					
Detailed Description of Project:					
Order/Policy:					
Hazard Name	Hazard Description	Cause	System States	Existing Controls	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)

Effects	Initial Risk					
	Severity	Severity Rationale	Likelihood	Likelihood Rationale	Initial Risk	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	

Safety Requirements/Mitigation Responsibility	Predicted Residual Risk		
Safety Requirement/Mitigation Responsibility	Severity	Likelihood	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 Figure I-2 below.

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. Figure I-3 provides a simple format for documenting alternatives to be considered by the CSA. The second step is to complete the CSA worksheet (Figure I-4) 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.

FIGURE I-2 – CSA PROCESS FLOW

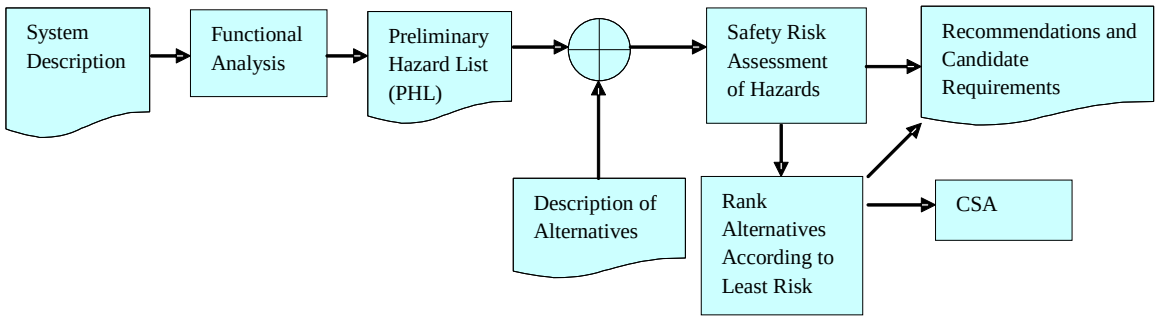

FIGURE I-3 – COMPARATIVE SAFETY ASSESSMENT (CSA) WORKSHEET

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											
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SAMPLE COMPARATIVE SAFETY ASSESSMENT (CSA) HAZARD DESCRIPTION WORKSHEET

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 / IMC 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 Criteria • Radar environment • FAA Order 7400.2E, Objects Effecting Navigable Airspace • 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 due to the fact that the NAS Watch screening tool revealed no navigation interference issues at this site (verified by NAS watch study) **(Low Risk Hazard)**	5E Extremely improbable due to the fact that the NAS Watch screening tool revealed no navigation interference issues at this site (verified by NAS watch study) **(Low Risk Hazard)**	5E Extremely improbable due to the fact that 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 VMC and 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 Due to the fact that there is potential communication interference of the Radio Communications Outlet/ Remote Transmitter Receiver (RCO/RTR) Sites 7 & 9 5 – No Safety Effect • Due to the fact that 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 Criteria • 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 7400.2E, Objects Effecting Navigable Airspace	3C Remote due to the fact that there is a potential impact to the RCO/RTR (verified by NAS watch study) **(Medium Risk Hazard)**	5E Extremely improbable due to the fact that the NAS Watch screening tool revealed no communication interference issues (verified by NAS watch study) **(Low Risk Hazard)**	5E Extremely improbable due to the fact that the NAS Watch screening tool revealed no communication interference issues at this site (verified by NAS watch study) **(Low Risk Hazard)**

FIGURE I-4 CSA ALTERNATIVE DOCUMENTATION

Comparative Safety Assessment Alternatives

SMS ID:

Locid: **Airport:**

Project Manager: **City:**

Description:

ALTERNATIVES

ID	Name	Description	Document
1			
2			
3			
4			

Operational Safety Assessment

Purpose

The Operational Safety Assessment (OSA) 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. [3]

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

FIGURE I-5. OPERATIONAL SAFETY ASSESSMENT WORKSHEET

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							
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